THE OIL WEEKLY

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The Oil Man's Calendar

SEPT. 30	American Gas Association, San Francisco.
OCT. 1	American Gas Association, San Francisco.
2	AIME Regional Meeting, St. Louis.
5– 9	National Safety Congress and Exposition, Chicago.
8–10	Texas Mid-Continent Oil and Gas Association, Dallas, Texas.
12–14	American Society of Mechanical Engineers, Rochester, New York.
12–17	AIME, Petroleum Division, Los Angeles.
19	National Stripper Well Association, Wichita, Kansas.
20–21	Independent Petroleum Association, Wichita, Kansas.
29–31	AIME, Petroleum Division, Austin, Texas.
30–31	Illinois Mineral Industries Conference, Urbana.
NOV. 5– 6	American Association of Petroleum Geologists, Los Angeles.
6	California Natural Gasoline Association, Los Angeles.
9–13	American Petroleum Institute, Stevens Hotel, Chicago.
16–18	American Institute of Chemical Engineers, Netherlands Plaza Hotel, Cincinnati.
17–21	National Chemical Exposition, and Industrial Conference, American Chemical Society, Chicago.

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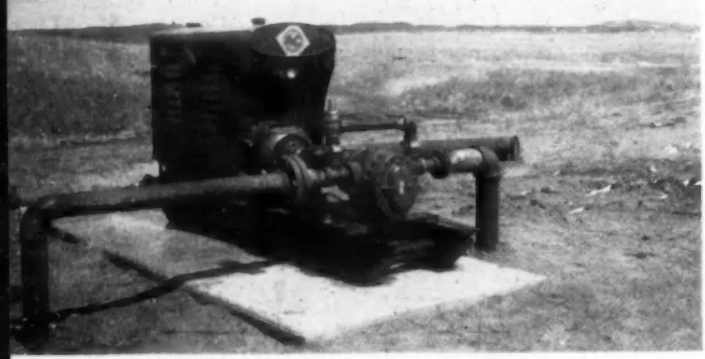

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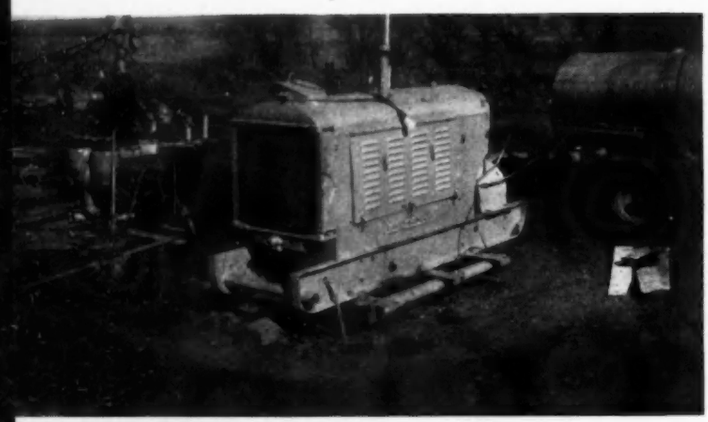

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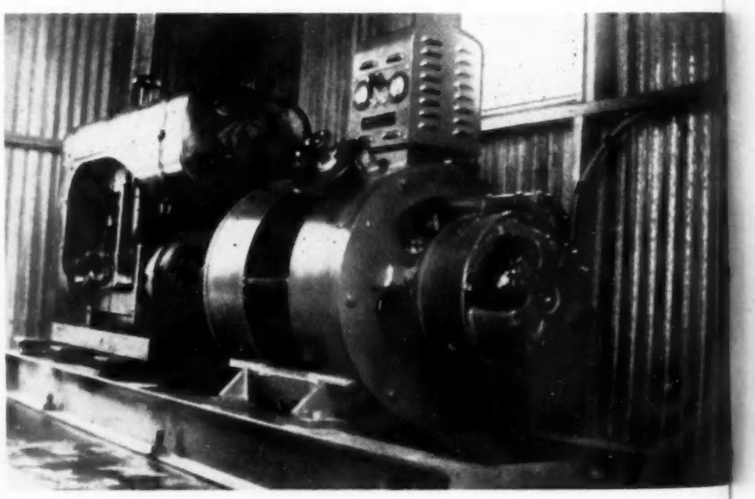

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The Changing Panorama

All Purchase Orders Must Be Classified

CONTRARY to the opinion of some, the oil industry is affected by the new Allocation Classification System established by WPB Priorities Regulation No. 10, which became effective July 1.

There should be no confusion between the Allocation Classification System and the fact that oil has not been included in the group of industries that July 1 started operating under the Production Requirement Plan, which allocates a definite amount of steel to each business. The Allocation Classification System is not a priority preference rating at all, but merely a system whereby WPB can determine to what use all materials are to be put.

Therefore, all purchase orders of the petroleum industry should bear the proper Allocation Classification System legend required by Priorities Regulation No. 10, as well as P-98 (until it is replaced) ratings. Manufacturers and suppliers must place the same symbol carried on customers' orders when they purchase.

The symbol 9:20 covers purchase orders for materials to be used in the production, refining, pipe line, storage and retail distribution of petroleum, oil and gasoline. Consequently, material being purchased for domestic use should bear the legend: "Allocation Classification DP-9:20—Petroleum." In the case of a foreign purchaser (FP), the letters FP would be substituted for DP (Domestic Purchaser).

Natural gas operations are designated by the symbol 9:40. This applies to all "public gas companies engaged in the production and distribution of both natural and manufactured gas."

The only exceptions to the above regulations, are in the case of construction of new buildings or building maintenance and repairs. Even in the oil and gas industries, purchase orders for such supplies are to be identified by 21.10 for new manufacturing and commercial buildings and by 22.00 for building repair and maintenance, and also operating supplies.

Calculations by a committee studying the petroleum exploration problems have recently brought to light a most interesting figure. It has been calculated that in one of the country's major areas, a pound of steel per barrel of oil reserve added, has been necessary in wildcat drilling. Thus the addition of one hundred million barrels to the reserve requires the expenditure of one hundred million pounds, or 50,000 tons of steel.

Survey Shows Effects Of Eastern Rationing

A SURVEY of the public attitude toward gasoline rationing on the East Coast indicates that about one-third of the motorists of that region have given up pleasure driving entirely but that only a few have yet adopted the economical practice of car-sharing when going to work, and the majority are educated to the fact transportation is causing the shortage. Paul W. Stewart and Associates made the study for Standard Oil Company (New Jersey) and Esso Marketer affiliates. The survey embraced various age, income and occupational groups and covered the region geographically.

The following percentages show the effect rationing has had on the driving habits of East Coast motorists. Of the replies, 36.0 percent said they had given up pleasure driving entirely; 29.0 percent said they had reduced such driving; 10.0 percent said they had sufficient gasoline for their needs; 7.0 percent said they never used their cars much anyway; 3.5 percent had cut out driving prior to rationing because of the tire shortage; 2.0 percent had stored their cars; 4.9 percent said their income or amount of business had been affected; 3.6 percent were planning business trips more methodically to save gasoline; 2.2 percent were using trolleys or buses to go to work; about 2 percent practice car-sharing when going to work.

Questions asking motorists to give their opinions on the cause of the East Coast gasoline shortage showed the majority, or 60.0 percent, recognized the difficulty grew out of the transportation situation. Twenty-one percent, however, bluntly blamed the trouble on "government." Military and defense industry needs were recognized by another 15 percent. Other causes were listed as the tire shortage, public waste, lack of cooperation between oil industry and the government, and government aim to create a war psychology.

A recent request that refiners, natural gasoline plant operators and producers with spare compressors that might be utilized in war plants being built by the petroleum industry, has resulted in the location of compressors totaling 92,000 horsepower, many of which are being put to work.

This highly successful achievement probably will prompt the planning of further requests in the near future for similar listings on various other spare equipment and materials.

Eastern Autos Cut To 240 Miles Monthly

MOTORISTS in the East Coast rationed district will do comparatively little driving.

On the basis of 15 miles to the gallon, the new gasoline-rationing plan to become effective on the East Coast July 22 provides for 2880 miles of driving annually, "A" ration books containing 48 coupons good for 4 gallons each. OPA calculates that the average motorist will drive 1800 miles for occupational purposes, while the remaining 1080 miles will consist of such general use as shopping, school, church, etc. This is equivalent to 150 miles per month for

business and 90 for other purposes, a total of 240 miles monthly.

If occupational driving exceeds 1800 miles a year and the motorist is a member of a Car-Sharing Club to take three or more persons to and from work regularly, or can show proof such a club cannot be arranged, he may obtain a "B" book of 16 coupons good for a three month period. Such motorists therefore can plan on driving 470 miles monthly (150 miles from "A" book and 320 miles from "B" book). The "B" book allotment may be tailored downward according to absolute needs of applicant.

Practically all motorists will come under the two above groups, since "C" books have additional requirements that the applicant be engaged in service essential to the war effort or public welfare, such as doctors, public utility maintenance cars, farm labor, ministers and official government business. The maximum obtainable under a "C" book is 96 coupons issued for a three-month period, or good for 1920 miles per month.

Trucks, taxis, and other commercial vehicles will be issued either the S-1 book (96 coupons worth 5 gallons each) or the S-2 book (384 coupons of 5 gallons each), which are good for a four-month period.

It should be borne in mind that all coupon values are subject to change in accordance with the East's petroleum supply situation.

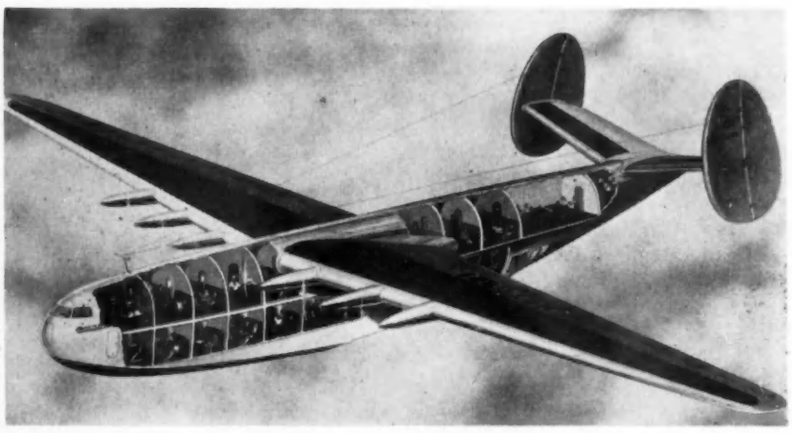
Motor Transportation In Europe at Low Ebb

EXCLUDING Russia, only about 600,000 commercial vehicles and perhaps 400,000 passenger cars now remain in operation of the 6,200,000 in Continental Europe before the war, according to a new analysis of the few available facts that has been made by the Petroleum Press Service. Thus motor transportation at present is only 16 percent of the number in use before the war.

However, the restriction in petroleum consumption has been even more severe because of reduced mileage and use of alternative fuels. Perhaps two-thirds of the commercial vehicles and a small number of the passenger cars are running solely on alternative fuels to replace scarce petroleum, mostly producer gas generated from charcoal, wood or coal. Hence, it is estimated, consumption of liquid fuels has been drastically curtailed from about 85,000,000 barrels to 10,000,000 or 12,000,000 barrels a year. If these figures are correct, the Nazis have more than 110,000,000 barrels a year of petroleum to dole out to their armed forces and to use as fuel oil in their industrial plants.

Contraction of motor vehicle operation has been most severe in France, formerly the most highly motorized nation on the continent, with a fleet of about 2,400,000 vehicles. Last October, according to a Nazi-controlled paper, no more than 1,000,000 motor vehicles remained in usable conditions, and at least 70 percent of these were laid up through lack of fuel. Similar contractions took place in most occupied countries.

Sweden provides an outstanding example of adaptation to changing conditions, most of its 222,000 vehicles were forced off the road after hostilities broke out, but by the end of November, 1941, more than 70,000 had been converted to use of producer gas. Because of an abundant supply of cheap wood, Sweden was favorably situated for this conversion.



First released pictures of Glenn L. Martin Company's new design for a 250,000-pound flying ship. It was for this design, which can be translated at any time into an actual air vessel, and the 140,000-pound Mars, largest flying boat in the world now ready for tests, that Glenn L. Martin won the American Design Award recently.

This new ship will be able to carry 102 passengers, each with 80 pounds of luggage, plus 25,000 pounds of mail and cargo to London in 13 hours. As military transports, such ships would be able to carry large numbers of troops and heavy supplies. As commercial vessels, for which the design was drawn, they would be able to rival, in a year of operation, the payload carrying of surface ships. Martin, whose firm built the China Clippers and her sisters as the first transocean commercial giants, declares now that the only limitation to the size of flying ships is commercial demand.

The Navy's new colossus, Mars, could carry 150 armed men and their equipment, Martin said, if she were used as a transport. The interior of her hull is equivalent to the interior of a 15-room house.

Such sky leviathans will consume large quantities of high-octane aviation gasoline.

Speedy Bomb Making To Affect Oil Casings

SUBSTANTIAL improvements in the technique of manufacturing casing for oil wells is likely to result from experiments that have developed new methods of making bombs much more rapidly than heretofore.

For many years a carbon-molybdenum seamless steel pipe has been used to case deep oil wells. To keep steel "flakes" from forming in the center of the steel, this pipe steel has always been cooled very slowly.

Now this same alloy, produced in the same tubular shape, forms the casings for bombs. The necessity of making tens of thousands of bombs in a hurry has resulted in development of a method where this type steel casing can be cooled much faster. The solid steel blocks still retain the "flakes," but when the finished tube is produced, no flakes or internal flaws are present.

WASHINGTON ROUNDUP

By B. F. LINZ
Washington Correspondent

OPA Approves Higher Prices in Eastern Region

Congressmen Criticize Rationing and Big Pipe Line Plans

P-98 Is Amended and Extended

Committee Approves Mansfield Bill and All Amendments

William B. Heroy Becomes OPC Director of Reserves

A PAT on the back and a $3,365,000 appropriation for OPC was probably the most satisfactory of a series of developments in the oil situation in Washington the past week.

Commendation for OPC achievements and money for its operation during the new fiscal year came from the House Appropriations Committee, but on the other side of the Capitol, Senators Bailey of North Carolina and Maybank of South Carolina criticized Coordinator Ickes, the former for last summer's gasoline-consumption curtailment and the latter for having done nothing concrete to meet the East Coast supply situation.

The two senators voiced their complaints after J. R. Parten, OPC transportation director, testifying at hearings on the Mansfield Inland Waterway-Florida Pipe Line Bill, had opposed construction of steel barges in view of the dwindling steel supply and had pointed out that a three-year project of waterway development would do nothing toward coping with the current supply problem.

A development of more direct interest to the industry was the extension of Preference Rating Order P-98, with some modifications, for one month to give further time for the working out of the new plan under which material needs of the industry will be provided for.

Another development of direct interest to the industry was an increase of 2½ cents per gallon in Eastern gasoline prices and a 2 cent increase per gallon in some other products. These led to acrimonious complaints from some members of Congress, but will go a long way toward offsetting the high transportation costs the industry has been footing for the past seven months or more.

Unfavorable developments of the week were the apparent failure of the industry's rubber salvage drive to bring out more than a fraction of the scrap rubber which it was expected to do, although almost 8 months of reclaiming plant capacity had been collected by June 27 and some of the quantity collected had not yet been counted. This led President Roosevelt to order a 10-day extension of the campaign.

A probe of the Longview-Salem pipe line project was asked of the Truman committee investigating national defense activities by Senator Wiley of Wisconsin, who suggested the line should be scrapped because, he said, the bottleneck of transportation is between the East and the Middle West and will not be opened by a pipe line from the Middle West to the South.

The Senate Patents Committee, which recently explored the Standard Oil cartel agreement with I. G. Farbenindustrie, will resume its investigations this week, with Standard again the subject of inquiry. A number of points regarding the patent situation remain to be cleared up, it was said.

☆

P-98 AMENDED: Preference Rating Order P-98, which provides priority assistance for the petroleum industry, has been amended and extended from July 1 to July 31, 1942.

Most important amendment is a provision that suppliers who are also Class 1 Producers (companies using more than $5,000 worth of basic metals in a quarter and are therefore required to use the Production Requirements Plan) are forbidden to extend preference ratings except under PRP or the interim procedure prescribed by Priorities Regulation No. 11. This applies only to suppliers and manufacturers, not oil companies.

Order P-98 is also amended to provide that the preference ratings which it assigns may be extended only in conformity with the uniform methods prescribed by Priorities Regulation No. 3. The order and all transactions which it covers are made specifically subject to the applicable provisions of all Priorities Regulations issued by the Director of Industry Operations.

These changes in P-98 were generally interpreted to mean that only users (oil companies and operators) could originate preference ratings, and that the amendments would result in reduction of inventories held by both oil companies and supply firms.

Commenting on extension of the order, Deputy Coordinator Davies explained it was necessary to enable operators to have a form of adequate preference rating assistance until such time as the new plan can be formulated. Davies revealed that OPC experts, in cooperation with the WPB Bureau of Priorities and representatives of the industry, "have been working for the past month to make final arrangements concerning the industry's needs for materials."

Amended Text of P-98
Page 12

Within the month it is planned to perfect the new system under which oil operators will secure allocations of materials under a Special Requirements Plan which is to supplement the Production Requirements Plan recently adopted for other users of metals.

It was said that a number of problems remain to be worked out before the new method can be ap-

Official Text of Amended and Extended P-98

Title 32—National Defense
Chapter II—War Production Board
Subchapter B—Division of Industry Operations
Part 1041

PRODUCTION, TRANSPORTATION, REFINING, AND MARKETING OF PETROLEUM

AMENDMENT NO. 2 OF PREFERENCE RATING ORDER NO. 98, EXTENDED AND AMENDED

(a) Section 1041.1 (Preference Rating Order No. P-98, Extended and Amended), paragraph (d) (3) is hereby amended to read as follows:

(d) **Restrictions on Use of Ratings.**

(3) **Restrictions on Suppliers.** A Supplier may extend a preference rating to the delivery of Material only in conformity with the applicable provisions of Priorities Regulation No. 3*, as amended from time to time.

(b) Section 1041.1 (Preference Rating Order No. P-98, Extended and Amended), paragraph (e) (1) is hereby amended to read as follows:

(e) **Application of Preference Ratings.**

(1) Preference ratings assigned herein shall be applied or extended only in conformity with the applicable provisions of Priorities Regulations No. 3†, as amended from time to time. A Supplier, who is also a "Class 1 Producer" within the meaning of that term in Priorities Regulation No. 11‡, may not extend a preference rating except when permitted under the terms and provisions of such Regulation.

(c) Section 1041.1 (Preference Rating Order No. P-98, Extended and Amended), paragraph (3) is hereby amended to read as follows:

(m) **Applicability of Priorities Regulations.** This Order and all transactions affected thereby are subject to the applicable provisions of any Priorities Regulation issued by the Director of Industry Operations, as amended from time to time.

(d) Section 1041.1 (Preference Rating Order No. P-98, Extended and Amended), paragraph (n) is hereby amended to read as follows:

(n) This Order shall continue in effect through July 31, 1942, unless sooner revoked.

Issued this 30th day of June, 1942.

J. S. KNOWLSON,
Director of Industry Operations.

☆ ☆ ☆ ☆ ☆

The following footnotes on amended P-98 have been prepared by THE OIL WEEKLY for the convenience of its subscribers, and are not a part of the official text. Reference marks refer to points indicated in above official text.

*The section of Priorities Regulation No. 3 referred to in amended Paragraph (d) (3) of P-98 is paragraphs (c)(1)(ii) and (c)(2), which were amended on June 26. The provisions of these paragraphs follow:

Paragraph (c)(1)

"(ii) material which is required to replace in inventory material so delivered or incorporated. Material shall not be deemed to be required if the delivery can be made and a practicable working minimum inventory of such material still retained; and if, in making delivery, the inventory is reduced below such minimum, the rating may be extended to replace such material only to the extent necessary to restore the inventory to such minimum; provided, however, that the material ordered for replacement must be substantially the same as the material delivered or incorporated in the material delivered, subject only to minor variations in size, shape or design or substitutions of less scarce materials, which in any case, do not substantially alter the purpose for which the same is to be used."

Paragraph (c)

"(2) In addition, any person may extend a rating to deliveries of operating supplies (including lubricants, catalysts, abrasives and small perishable tools) which are actually required and will be consumed by him in physically processing other material to the delivery of which he has extended the same rating, except that

(i) the cost of the operating supplies to which he extends the rating shall not exceed ten percent of the cost of the particular materials to be processed therewith, and to which he extends the same rating;

(ii) not more than 25 percent by value of the operating supplies so rated in any calendar month shall be metals in any of the forms listed on the Metals List attached to Priorities Regulation No. 11; and

(iii) no person may extend such a rating to obtain operating supplies if his receipts or withdrawals from inventory during the most recent calendar quarter, or his anticipated receipts or withdrawals from inventory during the current or the next succeeding calendar quarter, of metals in the forms listed on said Metals List aggregate $5,000 or more in value."

†Paragraph (e)(1) of P-98 has been amended so that the applicant endorses his certification as follows:

"CERTIFICATION"

The undersigned purchaser hereby represents to the seller and to the War Production Board that he is entitled to apply or extend the preference ratings indicated opposite the items shown on this purchase order, and that such application or extension is in accordance with Priorities Regulation No. 3 as amended, with the terms of which the undersigned is familiar.

.....
(Name of Purchaser)
.....
(Address)
By.....
(Signature and title of duly authorized officer)
.....
(Date)

Relation of PR-3 to this Certification is Paragraph (b)(2) of PR-3:

"(2) Preference ratings may be applied by the person to whom they are assigned only to the specific quantities and kinds of material authorized, or to the minimum required amounts of material when no specific quantities are authorized. Ratings which have been applied or extended by others to deliveries to be made by a person may, subject to the provisions of this regulation, be extended by such person in order to obtain not more than the same amount and kind of material (except as specified in paragraph (c)(2) of this regulation) which he has delivered or is required to deliver pursuant to such ratings."

In addition to this all purchase orders now must also conform to Priority Regulation 10, which is for the purpose of showing the eventual use of the material. In the case of petroleum the indication is DP 9.20, in the case of gas DP 9.40. Additional details on this appear on page 9 of this issue.

‡Class 1 producers as defined by Priorities Regulation No. 11 are those companies using more than $5,000 worth of basic materials in an annual quarter. They are required to apply preference rating extension under the Production Requirements Plan, or by the interim procedure prescribed by Priorities Regulation No. 11.

The Interim Procedure for Class 1 Producers was amended on June 22 to read as follows:

"(e) **Interim Procedure for Class I Producers.** Any Class I Producer who is not in default in filing his PRP Application but has not received his PRP Certificate may apply or extend preference ratings for delivery during the third quarter of 1942 as follows:

(1) If he has been operating under the Production Requirements Plan, he may apply the same preference ratings he was authorized to apply during the second quarter of 1942 to not more than 40% of the amount of each material which he has indicated on his PRP Application as his anticipated requirements for the third quarter.

(2) If he has not been operating under the Production Requirements Plan, he may continue to apply and extend ratings under any applicable preference rating orders or preference rating certificates in the same manner as permitted prior to July 1, 1942; and, notwithstanding the termination of any preference rating order on or after June 30, 1942, the same shall be deemed to continue in effect as to any such person until he receives his PRP Certificate; provided, however, that he shall not apply or extend ratings to the delivery in the third quarter of 1942 of any material in an aggregate quantity greater than 40% of the amount of such material which he has indicated as his anticipated requirements on his PRP Application for that quarter, subject to any further restrictions contained in the preference rating certificates or orders assigning the ratings which he is applying or extending.

(3) A Class I Producer who applies or extends any preference rating pursuant to subparagraphs (1) or (2) of this paragraph (e), shall deduct the amount of any material which he has received or to which he has applied or extended such rating from the amount rated or otherwise authorized by his PRP Certificate when issued to him."

plied. It will be designed to take care of the material needs of industries whose requirements are uncertain and cannot be forecast with any degree of accuracy over the three-month period for which the needs of consumers under the production requirements plan are projected.

☆

PRIORITY RATINGS: With so many A-1-A priority ratings outstanding as to make them practically useless as a means of securing prompt delivery of controlled products, WPB last week scrapped the whole set-up and established a new series of high preference ratings.

The new ratings will be AAA, AA-1 and AA-2, etc., which will take preference over all A-1a ratings.

WPB explained that the chief purpose of the change is to permit greater flexibility in the assignment of preferences to definite quantities of military and related non-military items, most of which have heretofore been either AA or in the A-1 series.

The board consistently has had trouble with its high preferences, finding so many manufacturers entitled to top ratings that it is forced to issue certificates which, in some instances, total to more of a commodity than is being produced. To cure such jams as they occur, it has been necessary to revise the ratings from time to time.

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MANSFIELD BILL: Shortly after conclusion of hearings, the Senate Commerce subcommittee in charge of the Mansfield bill for development of the intracoastal waterways and construction of a pipe line across Florida, announced that it had approved the measure and all the various amendments attached to it. The vote on the waterway development and the two pipe lines, one across Florida and the other from Tinsley, Mississippi, to the Atlantic Seaboard, was unanimous, but inclusion of the Lucas amendment, which would strip OPC of its authority over spacing of shallow wells, was opposed by Senator Josh Lee of Oklahoma.

Hearings on the measure opened June 29, and ran into argument over the necessity for the legislation at once. None of the government representatives who testified held hope that the waterway and Florida line could be of much value in the current East Coast shortage, because of the time required to build the necessary barges.

The question of necessity was raised by Senator Vandenberg of Michigan, who asserted no legislation was needed for the pipe line and protested further "division" of Federal authority.

"What we need is a concentration, not a further division," he said. "The President already has authority to order the pipelines built and he has vested that power in Mr. Ickes as head of the Office of Petroleum Coordinator."

Efforts of Senator Bailey of North Carolina, who presided over the hearing, to eliminate the appearance of witnesses who testified before the House Rivers and Harbors Committee and whose testimony is available in printed form, were frustrated when Senator Vandenberg declared he wanted to hear a representative of the Army Engineer Corps and J. R. Parten, OPC director of transportation.

At the opening of the hearing, Senator Pepper of Florida, author of a bill similar in tenor, said his measure could be displaced by the Mansfield bill which, he said, is "completely satisfactory."

To give the subcommittee a clean record, Bailey at the outset pointed out that the pipe line provision of the bill properly belonged to the Interstate Commerce Committee and the Lucas amendment stripping OPC of authority to control the drilling of shallow wells should go to the Committee on Mines and Mining. However, he said, the Commerce Committee would handle the bill unless the other committees expressed a desire to have those parts which properly should come before them.

Testimony on Florida Projects

The chairman pointed out that it will take four months to build the Florida pipe line, 50 months to construct the barge canal across the state and three years to build the canal to the Rio Grande. Meanwhile, he said, tankers are out of the picture, because there is no steel to build them and such as are left are in war service.

"I gather from the testimony before the House committee that there is not a great deal of hope to be offered from barge transportation," he said.

As the hearing of witnesses began with Roy Miller of Corpus Christi supporting the measure as vice president of Intracoastal Canal Association of Louisiana and Texas, it was indicated the same ground would be traversed as before the House committee and that an effort would be made to make the measure a catch-all for improvement projects blocked through failure of Congress to handle the river and harbor legislation.

During the week the committee heard Major General Eugene Reybold, chief of Army engineers, and J. R. Parten, chief of OPC transportation division, warn that the East need expect no relief for at least three years.

Parten told the committee that it will be essential to use tankers next winter to meet the demand for heating oil, asserting that "in my opinion, without some tanker shipments we cannot keep out of serious trouble."

The combined facilities of existing and contemplated pipe lines and inland waterways will not be sufficient to meet demand, he said.

Reybold's testimony largely traversed the ground covered before the House committee last month, but he warned the Senate group that it will take three years to build the waterway development contemplated in the bill.

The subcommittee was told that three pipe lines should be constructed across Florida, instead of just the one approved by OPC, but it was not made clear whether definite assurance had been secured of the availability of the necessary used pipe.

Testimony on Trans-American

The revised and revived Trans-American pipe line, which the House included in the bill on an amendment by Representative Rivers of South Carolina, received little support from official quarters, Secretary of War Stimson, in a letter to the subcommittee, opposing it because of the acute shortage of steel.

Stimson told the subcommittee the line from Tinsley to Savannah or Charleston would require from 41,000 to 84,000 tons of steel and would divert that much from the

Florida pipe line and the Army and Navy.

Vincent C. Shinkle, engineer for Trans-American company, declared the line could be built in 90 days and would move 70,000 barrels of oil daily. Aleace Walker, vice president, and Paul Hadlick, counsel, spent most of their time in charging the project was being balked by officials with oil company connections.

Walker asserted that Brigadier General Walter B. Pyron, who participated in the hearings of the Office of Defense Transportation, had been an executive of Gulf Oil Company. In addition, Hadlick said T. B. Down, advisor to ODT Director Joseph B. Eastman on pipe line matters, had been counsel for several different companies and that G. H. Meyer, head of the ODT board which considered the Trans-American application, had done work for Pure Oil Company.

Hadlick charged that the project, which it is planned eventually to extend to Wichita Falls, Texas, has been opposed by "people who don't want the line to the coast because they are looking to the competition situation after the war."

"Everybody in authority is connected in some way with the major pipe lines and they don't want to see another pipe line come in," he complained.

Senator Lucas of Illinois urged the subcommittee to incorporate his amendment relaxing the restrictions on Illinois production. If this is not done, he said, he will seek to secure its adoption as separate legislation.

"If the Illinois fields are put to work, there is no question that they can produce oil without very many pipe lines," Lucas said. The Longview-Salem pipe line, he charged, is merely a plan "to pump oil into one of the biggest Illinois fields."

The lucas amendment was opposed by Donald R. Knowlton, OPC director of production, who said it would strip the coordinator of his authority and pave the way for wasteful unrestricted production.

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PIPE LINE: Scrapping of plans for the "big-inch" pipe line from Longview, Texas, to Salem, Illinois, and construction instead of a line from the East Coast to some point in the Middle West, was urged last week by Senator Alexander Wiley of Wisconsin in a letter to Senator Truman of Missouri, suggesting an investigation by the Truman committee studying the national defense program.

Wiley charged that the "big-inch" project will interfere with the war program because it is only part of an over-all program "which will extend the line from Salem to the East Coast immediately upon completion of the Texas - Salem portion, thus requiring a total of approximately 396,000 tons of steel."

There is a "tragic shortage" in steel which is affecting the rate at which we can produce combat items and war material, Wiley said, giving rise to grave concern over the additional demands the line will make on the steel supply.

"The plan as submitted by OPC to the War Production Board for its approval is, in my judgment, neither practical nor economical," he told Truman. "If the fuel shortage is on the Eastern Coast and the bottleneck in transportation between the East Coast and the Middle West, then why build a pipe line from Texas to the Middle West?

"Qualified oil operators and engineers will, I am certain, support my statement that if a pipe line from East Texas to the Eastern Seaboard is under contemplation, the eastern portion should be built first because it will save several months in the completion time and will afford immediate relief to the eastern transportation bottleneck.

"It is my hope that the investigation of your committee relative to this suggestion will result in a recommendation to WPB that they consider abandoning the present plan in favor of a pipe line from the East Coast to some appropriate point in the Middle West—which, incidentally, need not be as far west as Salem in the opinion of many experts."

Wiley pointed out that there are a "great many" pipe lines running from the southeastern oil fields, the Mid-Continent fields and the Illinois fields which could bring oil to a central point, where the supply can be further augmented by barges and tankers up the Mississippi and by the fact that tank cars with a total capacity of 100,000 barrels a day would be released there for a return trip South rather than having to continue over the mountains to the East.

"The construction of the pipe line from any appropriate Midwestern gathering point to the East would insure the Eastern Seaboard against the fuel shortage this winter and would undoubtedly eliminate the construction of any pipe line from the midwestern area to Texas," he contended.

"This would mean a saving for war material of the steel which would otherwise be required for the construction of the second leg of the over-all pipe line. In other words, we would be saving at least 10,000 tons of steel (and probably more if the Eastern line did not go as far west as Salem). If we went ahead and constructed the line from East Texas to Salem, the expenditure of additional steel for the second leg of the pipe line to the East Coast would be inevitable and would require another six months to complete it, thus postponing relief for the eastern oil shortage until the spring of 1943.

"In short, may I ask your committee how a 550-mile line from East Texas to Salem will alleviate any shortage on the East Coast when it is generally admitted that the transportation bottleneck lies between the Middle West and the East Coast?"

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PRICES: Slapping at the refusal of Congress to subsidize the industry for the additional costs of war-time transportation, Price Administrator Leon Henderson last week issued the long-expected authorization for an increase of 2½ cents per gallon on gasoline and two cents on kerosene and fuel oils other than residual along the Eastern Seaboard.

In a formal statement, Henderson made it clear that he authorized the higher prices only reluctantly and that OPA "is keenly aware of the inequity of making consumers of petroleum products bear the entire cost of the submarine warfare against tanker movement along the eastern coast.

"It is my own feeling, and one which I am sure is widely shared, that the higher cost of getting petroleum to the East Coast resulting from enemy action is an appropriate charge against the public treasury, just as is the cost of the

patrol boats with which we sink the submarines," he said.

Henderson explained that while the Emergency Price Control Act specifically authorizes payments in order to maintain an adequate supply of essential commodities, arrangements could not be worked out at this time to absorb the higher cost of moving oil, and in order to assure that the supply on the East Coast is not hampered it became necessary to place the burden upon the consumer.

"Moreover," he said,"price increases of this sort have a bad dislocating effect on the whole cost situation of industries operating under our ceilings. Water borne fuel oil, for example, delivered at tanker rates is an economical fuel for most industries. Should it have to carry, even temporarily, land transportation rates, this would have a serious effect on prices charged by the industries which use heavy fuel oil. The fact that these increased fuel costs are temporary makes it especially desirable that the Government absorb the higher costs rather than have them translated irrevocably into higher prices all along the line.

"In the present situation, we have corrected this to the best of our ability by loading the increased cost on to gasoline and light fuel oils where it will not be pyramided. Admittedly, however, this is not a satisfactory solution. I hope a permanent solution will be forthcoming for this and similar problems in the future."

As the increased price went into effect June 29, the House Appropriations Committee made public testimony taken during hearings on the money bill for OPA, disclosing that Henderson was questioned sharply regarding his position of opposition to increases in crude prices.

Opposes Crude Hike

The fixing of crude prices "is one of the toughest jobs we have," Henderson told Representative Johnson of Oklahoma in response to a question. Refusal to grant an increase, he said, was based on investigations showing that many independents are making "adequate" profits "and it has not seemed that the price of crude warranted an increase either from reasons of cost, lack of profit, or necessity for expansion."

"Where there is one small independent producer who is making money, there are ten of them who must abandon their so-called stripper wells unless you grant some kind of relief," Johnson declared.

Henderson admitted that he personally had not investigated the situation nor read the complete report of the PIWC committee on petroleum economics but that those matters went to the petroleum price branch. However, he asserted, he could not see his way clear to grant an increase of 25 cents a barrel which he said would be roughly $1,000,000 a day or $365,000,000 a year, to encourage wildcatting.

"If it is necessary to bring in, by some incentive, an additional amount of small wells by wildcatting, I certainly think that in this emergency we are warranted in looking for other methods of approach," he asserted. "I see no reason to pay 25 cents a barrel on all production, to all companies, for wildcatting, when only a few companies actually do the wildcatting. In other words, the 25 cents a barrel that would be paid on crude would go in the main to people who already own oil properties and would be a bonus to them for which the Government would get practically nothing.

"I should say I would agree with the Congressman that there is a necessity for an incentive, but I return to my original idea, that is, my job is to keep prices down to the best of my ability; and when a proposition comes up which is going to cost $365,000,000 a year, to be aded to the price, I am warranted in considering whether or not there are other alternatives. And I see no reason, if Mr. Ickes wants 30,000 new wells, why he does not arrange suitable financing for bringing those in. It could certainly be done much cheaper than $365,000,000."

Members of the committee also discussed the East Coast rationing program. Figures on supply and pertinent conditions were submitted confidentially, having been held by the Office of Facts and Figures to be of military value.

Estimates submitted by Henderson showed that the gasoline rationing program as now laid out will involve a cost of $2,019,950 for the fiscal year 1943 and will be the most expensive of all the rationing programs so far devoloped.

Henderson's action in increasing East Coast prices brought sharp criticism from members of Congress, and the Senate took time out from its last-minute consideration of appropriation bills to hear Senator Smith of South Carolina complain that small filling station operators were going broke and Congress ought to recall some of the authority it has delegated to "miserable misfits."

Senator George of Georgia joined in flaying OPA, asserting that the increase actually is a tax "to be paid over to a special class."

George declared that if rationing is necessary to conserve rubber, it should be on a nation-wide basis, and predicted that the price-ceiling program eventually will blow up because of Henderson's failure to put ceilings over raw materials and labor.

Senator White of Maine told the Senate his state has had its $100,000,000 tourist business ruined by rationing.

APPROPRIATIONS: Operations of OPC will cost $3,365,000 during the fiscal year beginning July 1, and that amount was provided for in one of the last appropriation bills to come before Congress as the 1942 fiscal year drew to a close.

This was the first appropriation made directly by Congress for OPC, which heretofore has been financed by the President out of his emergency funds. Late last month Coordinator Ickes told a House Banking and Currency Committee that the operations of OPC from its creation by the President May 28, 1940, to the present time had cost approximately $1,750,000, but that expenses would increase during the coming year.

Activities of the agency were reported to the House Appropriations Committee during hearings on the measure carrying OPC funds, by Deputy Coordinator Davies.

The achievements in increasing the output of 100-octane aviation gasoline and in meeting the East Coast fuel oil situation, Davies said, have elements of the dramatic but, he added, "there is not entire lack of the dramatic in the fact that the oil man who gave up a thousand feet of casing has yielded material for ten 37-millimeter antiaircraft guns; that the driller who sacrificed a steel derrick sacrificed the equivalent of a medium tank; and that the operator who went

without 250 feet of rotary chain was, in effect, producing 100 Garand automatic rifles."

Davies emphasized that OPC has a task of great magnitude—fueling and lubricating 185,000 planes, 120,000 tanks and 18,000,000 tons of ships of our own, supplying whatever oil may be needed by our Allies and meeting civilian needs to the very greatest extent possible.

"There is probably no industry more complex or more highly technical than the oil industry," he explained. "Its magnitude alone makes for complexity, embracing as it does some 300,000 marketers, 180 producers, and hundreds of refiners and transporters. It is a delicately balanced, finely interrelated mechanism, extremely sensitive to dislocations which to the layman might seem inconsequential. These factors we must bear constantly in mind as we strive to mobilize the industry most effectively for war, and to cushion it insofar as that is possible so that the shocks of war shall not interrupt its productivity or force parts of it out of the fight altogether.

"For these reasons the coordination of oil has been and needs to continue to be a job for experts, for practical oil men thoroughly trained in the realities of oil, and not for dilletantes nor theorists. We have obtained a great deal of this expert assistance from the industry itself, through our district committees, through the Petroleum Industry War Council, and through the technical subcommittees which have been set up to deal with specific problems. I should not attempt to estimate the millions of dollars which it would cost our taxpayers if we had to pay these industry executives and technical men a reasonable compensation for the talent which they are contributing to their Government without cost."

Davies explained that he, himself, draws a salary of $10,000 a year from the Government and the difference between that sum and his previous salary as vice president of Standard of California, reported as $56,000, is paid by the company.

Progress in meeting the 100-octane demand was reported by Wright Gary, OPC director of refining. No specific figures of production were given, but Gary caught the committee's interest with a statement that improvements in technique have increased the output from three barrels per 100 barrels of crude to 30 barrels.

Accompanying that development, he said, the cost of aviation gasoline, which formerly ranged from 14.5 to 38 cents a gallon, has been brought down to 12 and a fraction cents, much of the reduction being due to a cutting of profits by the producers.

During the hearings, members of the committee highly commended OPC set-up and in their report declared Davies' statement "one of the most interesting and most satisfactory reports of accomplishment that has come to the committee in connection with the war agencies."

Commenting upon the development of 100-octane production and the reduction of cost which, it said, would save the Government $25,000,000 a year, the report pointed out that "there has been fine cooperation in the industry in the effort to meet the Nation's war needs. It has required many sacrifices, improvements in technical processes, increasing of facilities, saving critical material by curtailing uses and finding substitutes, and endeavoring in every way possible to increase and improve the product."

In view of the responsibilities upon OPC, the House was told, "the amount granted to discharge the responsibilities of the coordinator's office is modest. Our armed forces so far have received sufficient supplies of petroleum products. They must continue to receive them and the coordinator's office should be adequately staffed to insure that they do."

WILLIAM B. HEROY
Becomes OPC Director of Reserves.

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APPOINTMENTS: William B. Heroy, prominent geologist, was named July 1 as successor to E. DeGolyer as director of the OPC conservation division, the title of which was changed to Division of Reserves.

At the same time, it was announced that William F. Huff, director of materials, had been assigned to represent OPC in the formulation and application of a program to obtain maximum use of inventories of supplies and equipment now in the hands of oil companies and others, and would be succeeded by Greer W. Orton, formerly assistant manager of the purchasing department of The Texas Company.

Heroy, a native of New York City, served the government in various capacities from 1907 to 1919, including that of chief of the division of power resources of the geological survey, petroleum advisor to the Department of Justice and advisory engineer to the fuel administration's Bureau of Conservation. He entered private industry in 1919, and until 1938 was employed by Sinclair Consolidated Oil Corporation and its successor, Consolidated Oil Corporation, for which he was chief geologist and manager of the exploration department when he resigned to become vice president and later president of Pilgrim Exploration Company of Houston.

Heroy served as a member of the committee on petroleum reserves of the American Petroleum Institute from its inception until 1938. He is a past president of the American Association of Petroleum Geologists, and prominent in American Institute of Mining and Metallurgical Engineers. In recent months he has been in Washington for the Bureau of Economic Warfare.

Orton, a native of Nacogdoches, Texas, joined The Texas Company following graduation from the University of Texas. He was selected for his new position because of the value of his experience in the oil company's purchasing department, which will be of value in carrying

[*Continued on page 35*]

How to Select, Install, and Maintain Control Equipment

By E. H. ALEXANDER
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ANY equipment in daily use, and upon which industry depends for continunity of service, requires periodic inspection and maintenance. This is especially important when plants are running at peak capacity and when top production depends upon the continuous operation of each and every piece of equipment.

Electric control is no exception to this rule. After operating sometimes thousands of times a day, it is vitally important that controls be inspected regularly and that replacements or repairs be made quickly when necessary. Such inspection and maintenance pays big dividends by helping to keep up continuous production and by preventing costly shutdowns that waste the time of men and machines.

As in all operating equipment, prerequisites to any good maintenance program are the proper selection and installation of the equipment.

Selection

The selection of electric control for a given application depends mainly upon the factors of available power, surrounding conditions, and starting conditions.

The points to be considered regarding available power are: whether alternating-current or direct-current power is used; if a-c, the number of phases; the voltage; the frequency; and whether a two-, three-, or four-wire system is to be used.

Complete information on any unusual service conditions should be sent to the manufacturer before selecting control equipment. The following is quoted from the NEMA Industrial Control Standards:

a. The use of apparatus in cooling mediums having temperature higher than 104° F. or at altitudes greater than 6000 feet should be considered as special applications.

b. There are further conditions which, where they exist, should be called to the manufacturer's attention. Apparatus for use in such cases may require special construction or protection. Among such unusual conditions are:

1. Exposure to damaging fumes.
2. Operation in damp places.
3. Exposure to excessive dust.
4. Exposure to gritty or abrasive dust.
5. Exposure to steam.
6. Exposure to excessive oil vapor.
7. Exposure to salt air.
8. Exposure to vibration, shocks, and tilting.
9. Exposure to explosive dust or gases.
10. Exposure to the weather or dripping water.

If control equipment is to be used under any of the above conditions, apply to the manufacturer for recommendations.

After the proper control has been selected for the job, the next important step is to install it correctly and make necessary adjustments before putting it into service.

Unpack the equipment carefully as small parts may be thrown away with the packing material. Mount the panel vertically, so that the contactors will open by gravity when power is cut off. Panels should be mounted on a flat surface, and care should be taken not to twist the back when mounting. Copper grounding terminals are provided on open controllers for connecting ground wires to the apparatus. The conduit connection to the cases of enclosed controllers is considered sufficient grounding protection.

The sealing surface of the magnet frame and armature is spread with grease or oil to prevent rusting in shipment. The grease or oil should be removed when the contactor is put into service, but the surface should be wiped occasionally with a thin, rust-resisting oil. Before power is applied, each contactor and relay should be operated by hand to see that the

Panels should be mounted vertically, so that the contactors will open by gravity when power is cut off. They should also be mounted on a flat surface and in a clean, dry spot if possible.

moving parts operate freely and without binding. All electric interlocks should be clean and should make good contact when closed.

Resistor boxes should always be mounted with the grids in a vertical plane, and should be so located that free ventilation is permitted. To keep heating at a minimum, it is recommended that six-inch spacers be used between boxes when stacked, and that the stacks be 12 inches apart. Such an arrangement is desirable when continuous or heavy intermittent duty is expected, and essential when boxes are stacked over six high. Slow-burning or noninflammable wire should be used in connecting to resistor terminals, to withstand the heat from the resistor.

Contactors are designed to operate properly if the line voltage is within 85 to 110 percent of the panel nameplate rating for alternating-current circuits, and within 80 to 110 percent for direct-current circuits. Wider ranges require special devices.

Where there is a continuous 10-percent increase in voltage, suitable coils should be ordered, because, with this increase in voltage there is an approximate 50 percent increase in wattage, which greatly increases the heating of the coil. While this will not cause immediate failure of the coil, the deterioration of the insulation is more rapid and the ultimate life of the coil is shortened. There is also an increase of 20 percent in the pounding effect, resulting in a more rapid deformation of the armature, crystallization of the magnet parts, breaking of the contact tips, and increased noise.

The armatures should seal when the proper voltage is applied to the coils and should open by gravity when the power is cut off. All contact tips should, when closed, make line contact near the bottom of the face. On opening, the final break will be near the top. The rolling and wiping motions when closing and opening keep the contacts in good condition.

Electrical interlocks are adjusted at the factory to make contact at approximately the same time that the main contactor tips touch, or even a trifle later. For some special applications the interlocks may make contact before the main tips touch but, in general, the above instructions apply. To change the adjustment, loosen the nuts on the front and back of the base and screw the stud in or out to suit the conditions.

Mechanical interlocks are so adjusted that, with one contactor in the sealed (closed) position, there is a very small play on the other contactor. This play must not allow the moving contacts of the second contactor to touch the corresponding stationary tips when the tips of the first contactor are just touching.

General Preventive Maintenance

Now that the control device has been properly selected, installed, and adjusted, the maintenance program itself starts.

A first consideration in keeping control equipment in proper working condition is to prevent an accumulation of dirt, oil, grease or water on the operating parts of the control. It is, therefore, advisable to carry in stock protective paints for the stationary iron parts, and insulating varnish of the proper characteristics for the coils.

Where the air is saturated with moisture, or subject to the action of corrosive gases, it is well to inspect and paint the various control parts from two to four times a year, depending on the severity of the operation conditions.

It is often desirable to add heaters or lamps within the controller enclosure to prevent condensation of excessive moisture. For best results, such heaters should be energized continuously, especially when the controller is not being used.

Circuit breakers or contactors are usually of very rugged construction. Still, it is best to operate them by hand from time to time and check to make sure that all of the clearances are normal and that parts are working freely. Should parts become worn so that adjustments cannot be maintained, new parts should be used. Adjustment and cleaning, as well as renewal of the tips, is necessary and depends on the frequency of operation of each device. In the case of contactors, for example, the armature should be cleaned and checked for free working and the condition of the magnet contact surfaces.

Occasional inspection should be made of all nuts and connection wires on panels and resistors, particularly when subject to vibration. Close inspection of pigtail connections should be made periodically since these are of finely woven wire for flexibility. In extremely corrosive atmospheres pigtail connections have been known to fall apart before there was any apparent indication of failure.

Float switches should be given the best of care, especially if they are of the moving contact type. The tips should be adjusted and lined up properly and, of course, cleaned if any indication of excessive corrosion is noted. The bearings should be made free to operate and any tendency towards binding should be corrected immediately.

In float switches of the mercury contact type, the mercury tubes should be held tightly in place, and if inspection shows that the tubes are becoming dark, it may be an indication of air leakage and the tubes should be renewed.

Trouble Shooting

Troubles are bound to occur in the best of control equipment. Knowing what to do about them when they do occur will save much precious production time. The remainder of this article will discuss some of the more common types of trouble which the maintenance force encounters with control devices, show the causes of such troubles, and explain how to stay one jump ahead of them. If the fundamental cause of each trouble is understood the remedy will quite likely be apparent, and ways will be found to lessen the resultant trouble.

A contactor has several bolted or spring-closed contacts. Excessively high resistance at these contacts is the cause of the very high temperatures, such as 212 to 392° F., that may be reached when the contactor is carrying rated current or less. The most likely point of high resistance is at the contact where the movable tip makes contact with the stationary tips.

However, high resistance may occur at any of the several bolted joints on the contactor. Therefore, if one of these devices begins to develop an excessive temperature, a millivoltmeter should be used to determine which of the several joints has a high-voltage drop across it. An alternating-current millivoltmeter is now available that can be used for checking the voltage drop on alteranting-current contactors.

When the copper contact or contacts that have excessive drop across them have been located, correction can be made by opening the contact and removing the oxide with a file (not with sandpaper or carborundum paper). It is unusual to find a high

resistance in a bolted joint unless the contactor has previously reached very excessive temperatures. However, when excessive resistances are found in joints the cause should be removed.

Since high resistance will most commonly be found in the active contact, it is a simple matter to inspect these tips weekly or monthly. If the temperature is unduly high, the tips should be given a few strokes with a file.

The foregoing comments apply particularly to copper contacts because they oxidize readily, and the copper oxide formed has a very high resistance. A file will remove the oxide and reduce the resistance to a low value again. Depending on various conditions, it may take a short or long time for the formation of sufficient oxide to cause excessive heating under ordinary types of service.

However, if sulphur gas is present, a high-resistance film will develop quite rapidly. To prevent this action, the contactor should be mounted in a tightly gasketed enclosure case, or immersed in oil.

Sometimes it is not practicable to keep the resistance of contacts low by filing them. When it is desired or necessary to maintain a low resistance of the active contact without servicing, a silver face can be brazed to the two tips so that the contact is made through that metal. Silver will oxidize and the oxide has a higher resistance than the pure metal, but when heated, silver oxide has the unusual property of reverting back to the metallic form. Therefore, silver contacts are self-purifying.

Electrical interlocks may fail to make circuit because of oxidation where copper contacts are used. Sometimes such failure occurs because dirt gets between the contacts. By using one hemispherical and one flat tip made of silver, both of these troubles will be overcome. The point of the hemispherical tip will make contact without trapping dirt particles between it and the flat tip, and the use of silver will overcome the oxide trouble occasioned by oxidation when copper contacts are used.

Excessive wear on the contact tips of a contactor indicates that it is operated frequently. For conditions of this kind, silver should not be used for the contacts, because it does not have the ability to stand up under this severe service as well as copper.

If the service is unusually heavy, and if the root-mean-square of the current is not more than equivalent to three fourths of the contactor's rating, the tip can be faced with a certain alloy that will last several times longer than copper tips. The cost of this material is high, but its use is sometimes warranted.

Some maintenance men have the erroneous impression that contact tips that have been roughened by service should be kept smoothed up so that they will carry the load. A roughened tip will carry current just as well as a smooth tip.

Of course if a large projection should appear on a tip because of unusual arcing it should be removed. However, a tip that has been roughened by ordinary arcing need not be serviced. If a copper tip becomes overheated, this condition indicates that oxide has developed and should be removed.

A large percentage of contactor-coil troubles can be traced back to heating. Therefore, if the temperature can be reduced, coil troubles can be greatly decreased. Since the heating of a direct-current coil will vary as the square of the voltage, and the heating of an alternating-current coil will vary about as the cube of the voltage, it follows that coils should be wound for the voltage that exists on the line. If the ambient temperature is high, this precaution is all the more important.

When an alternating-current magnet, such as a solenoid, is supplied with constant-voltage excitation it requires a large inrush of current to close the armature. When the armature closes the coil current drops to a normal value. Sometimes armatures may not close because of excess friction or for some other reason and the large inrush current may burn out the coil within a few seconds.

Such mishaps can be prevented by the use of a thermal cutout to protect the coils. When the thermal cutout opens because the armature fails to close, it is merely necessary to replace a small link made of two pieces of metal held together by a low-melting-point solder.

Resistors are important auxiliaries and are encountered in many types, such as porcelain-tube, enameled resistors, open-wound, wire resistors, strip-wound, cast-grid, etc. Some types are more likely to develop certain kinds of trouble than others.

Cast grids usually are assembled and held together by being clamped on a tie rod. The current passes from one grid unit to another across a ground face. When too much current, say several hundred amperes, is made to flow across these ground surfaces, they may develop high resistance and destroy the joint.

To overcome this difficulty, these joints should be cleaned and the current path paralleled. This procedure will reduce the current in the middle joints, where the trouble usually occurs or is most likely to develop.

Edge-wound or strip resistors usually have their terminals either brazed or welded to the strip, which prevents excess resistance from developing at this joint. In order to provide an adjustable contact on this type of resistor, a clamp type of terminal is sometimes furnished. However, since the resistor may become quite hot at this point, a bad contact is very likely to develop. Therefore, if one does develop, the best cure is to braze the terminal at the proper position.

The high-resistance cast grids that have a small cross-sectional area sometimes give trouble because of breaking, especially if they are mounted on machines that vibrate severely. The best correction for this trouble is to use an edge-wound resistor, which is non-breakable. This type is made of corrosion-resisting material that is capable of withstanding very high temperatures without scaling.

The function and importance of relays is too well known to need discussion here. To cover all the relays used would be an endless task because there are many varieties of them. A number of relays have been designed to operate as a function of time. The one that was designed first to operate on a time basis was the dashpot type. Movement of a solenoid is retarded by means of a dashpot, giving a time-current relation that is called an inverse-time characteristic.

The kind of trouble that is inherent in a dashpot was the primary reason for the development of the other types of timing relays. A dashpot is essentially a close-fitting device that is easily affected by dirt, gumming of the oil, and corrosion of the close-fitting parts. Also the torque of the magnets varies with the position of the solenoid armature in its coil.

If trouble is experienced due to tripping while

starting a motor or shortly after getting up to speed, there are three things that can be done:

1. A heavier oil may be used if the relay almost holds.
2. A starting contactor can be used that does not include the overload relay in the circuit. After the motor is up to speed, the running contactor can close and the starting contactor can open, connecting the overload relay into the circuit. This is a rather complicated method, but it is sometimes used.
3. The final alternative is to replace the dashpot with a temperature type of overload relay. This is one of the reasons why the temperature-type overload relays were originally developed.

Since the function of a temperature overload relay is to protect a motor under all ambient temperatures, its final temperature should be the same as that of the motor—which is 194° F. This means that a motor can have a 122° F. rise in a 104° F. ambient.

Therefore, the relay should just trip if placed in a 194° F. ambient, or in a pail of water held at that temperature. If a relay does not function correctly, it should be immersed in a pail of water kept at 194° F.

Replacing a movable contact on a 2300-volt motor control. Renewal parts should be handy at all times so that replacements can be made quickly.

and adjusted so that it will. The adjustment should not be made by bending the thermoflex strip. If this method of checking or adjustment does not provide the necessary degree of protection to the motor, it can be assumed that the size of the relay heater is not correct.

A temperature overload relay does not need any such maintenance attention as outlined for dashpots, but its use does involve the observation of certain precautions. Since it is sensitive to temperature, it should not be put in a strong draft, such as that from a window or a circulating fan. If it is necessary to place it in such a position, it should be shielded by a cover.

Conversely, a temperature overload relay should not be located above a source of heat, such as steam pipes. In brief, the relay should be in an ambient temperature that does not differ greatly from that of the motor.

The third type of relay is used for controlling the rate of acceleration of motors and for many other functions where a short-time-delay is needed. In the escapement type of relay, a pendulum is used as the governing means, which makes it necessary to mount the relay in a definite position with respect to the motion of the pendulum.

It is not always possible, however, to mount the relay in the proper position, and when it is in the out-of-true position it is less dependable. Shortening the pendulum makes it possible to tip the relay further from the vertical, but the shorter pendulum results in a shorter time delay.

To overcome this limitation a new design that has a balanced pendulum has been made available. The variation in time is obtained by changing the length of the stroke. In principle the two devices are the same, but mechanically they are quite different.

If the old-type escapements fail to time properly, their mounting position should be checked. However, if the application is such that it is difficult to mount and keep the relay in the proper position, use of the balanced type should be considered.

Corrosive fumes in many plants, such as those manufacturing rayon, coke, sulphuric acid, nitric acid, chlorine, and so on, rapidly attack the metal parts of control devices and render them inoperative.

To overcome this trouble all the operating parts are frequently immersed in oil in a container capable of withstanding the corrosive atmosphere. The container is made either of cast iron or heavy boilerplate steel, which is given a protective coating of a paint that is capable of withstanding the fumes of gases encountered.

When it is impracticable to oil-immerse a given type of control, the equipment is enclosed in a heavy case with a tight, gasketed cover. The enclosing case is protected with a suitable corrosion-resisting paint.

Know the Equipment

Control equipment can be quite simple or very complex, and the job of the maintenance man is easier if he has available instruction books and wiring diagrams covering every piece of control and every circuit for which he has responsibility. Extra coils and contact tips should be kept on hand as well as a complete list of spare parts. Maintenance is simplified considerably if the maintenance man makes a practice of becoming thoroughly familiar with the circuits and operation of each new controller as it is installed in the plant.

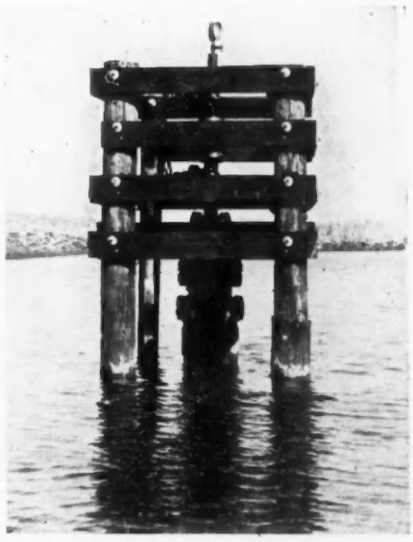
Marine Christmas Trees Require Special Protection

By GORDON B. NICHOLSON, Staff Writer

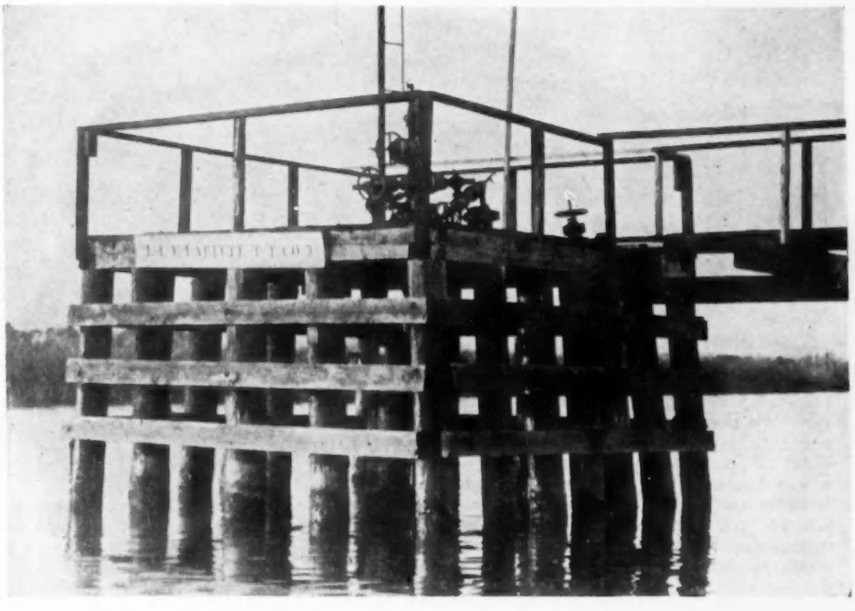
RECENT development of marine drilling and uncovering of oil fields in waters of the Gulf Coast have resulted in the evolution of various methods for protecting Christmas trees from damage by marine shipping and salt water corrosion, as well as employment of devices to prevent pollution of water and reduce hazard to movement of boats in the area. Numerous fields, and scores of oil wells, are located in natural waterways, open waters, or canals which are frequented by fishermen, commercial vessels, and barges, and for mutual protection, wells so situated must be conspicuously marked to attract attention of passing craft, and strengthened to prevent accidental damage.

In event damage occurs to a Christmas tree and a well blows out either by external damage or defective equipment, oil companies use every possible safeguard against catastrophic effects of waste and pollution, protecting not only their own interests but also the welfare of many families whose livelihood depends on fish and oysters living in the waters. To care for possible unavoidable damage of this nature, general practice in marine fields includes use of safety valves, usually placed in the tubing near bottom of the hole, and designed to reduce or cut off flow automatically before harm is done. Casings are packed off.

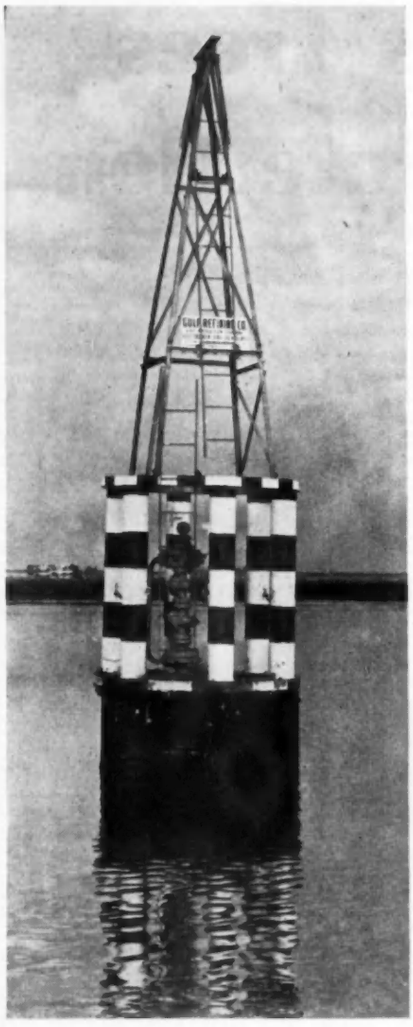
Oil companies operating producing wells in marine fields have developed various means of making leases accessible to workers. Several operators build elaborate camps including living quarters in the fields, and sometimes wooden walkways are constructed, leaving the camp and office site and extending in many directions, intercommunicating with all wells, providing safe and convenient access for travel and for carrying light equipment. Companies using this system often build large platforms about each well to facilitate mounting small units for running wire lines, to scrape paraffin, take bottom-hole pressure tests, or to adjust bottom-hole valves. These platforms are erected on strong piling raised above normal tide level, with all timbers creosoted or otherwise protected against the corrosive effect of salt water and air, and must be sufficiently sturdy



Other companies use boats to reach wells, eliminating need for considerable piling, lumber, and construction by erecting protective barriers around Christmas trees. In this photograph wells are enclosed in rectangular areas formed by four 40-foot creosoted piling driven into bottom of canal. These form a space about 4 x 8 feet in size, and cross members made of 3 x 8-inch planks in four rows provide a formidable obstruction against accidental damage. Planks are bolted to piles at each end by means of heavy galvanized bolts, and the piles stand seven or eight feet from the water level.



Group of 23 piling supporting 13 x 16-foot flooring is used by one company when wells are interconnected by wooden walkway. Slip piling which originally formed part of key-way for drilling barge are pulled to a height of 11 feet above water, and other piles, 40 feet long, are driven into bottom of the canal or bay. Piles taper from 12 inches in diameter at bases to seven inches at tips, and are creosoted to prolong service in salt water areas. They are spaced two feet apart on the long sides and three feet on the short sides. Rows of horizontal planks enclose the protected area. Christmas tree protrudes above the platform which is large enough to allow workers to make necessary manipulations on well or to adjust bottom-hole valves. Walkways, usually beginning at central camp or field office, mushroom in many directions, facilitating access to wells for employees and aiding transporting of equipment.

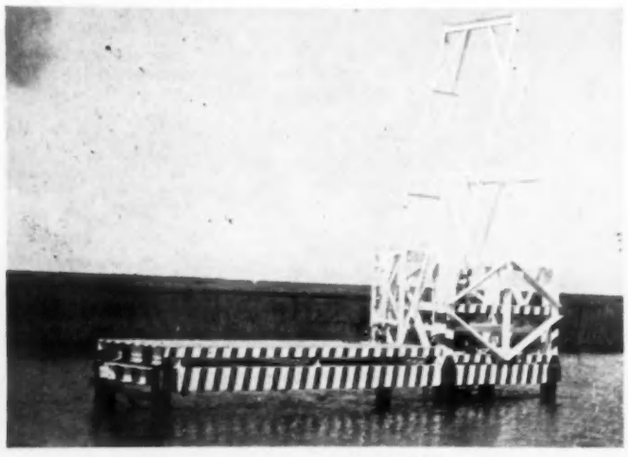


Brightly painted superstructure adopted by one large oil company attracts attention of passing boatmen and reduces danger of running into Christmas tree. The structure sets on top of six piling in hexagonal pattern, protruding about two or three feet above water. Inner circumference of piling is lined with a steel cylinder which prevents wastage of oil and debris into water, being erected before drilling well. Upright columns are made of steel, and steel gin pole is provided for running wire line. In areas where traffic is heavy, automatic lights are placed on top of pole to attract attention. For workovers, steel flooring on top of rim is separated into halves by removing bolts, and the device is separated and withdrawn to allow space for workover barge to approach. Piles are spaced about three feet apart, and diameter of circule around hexagon is seven feet.

to withstand battering of occasional storms.

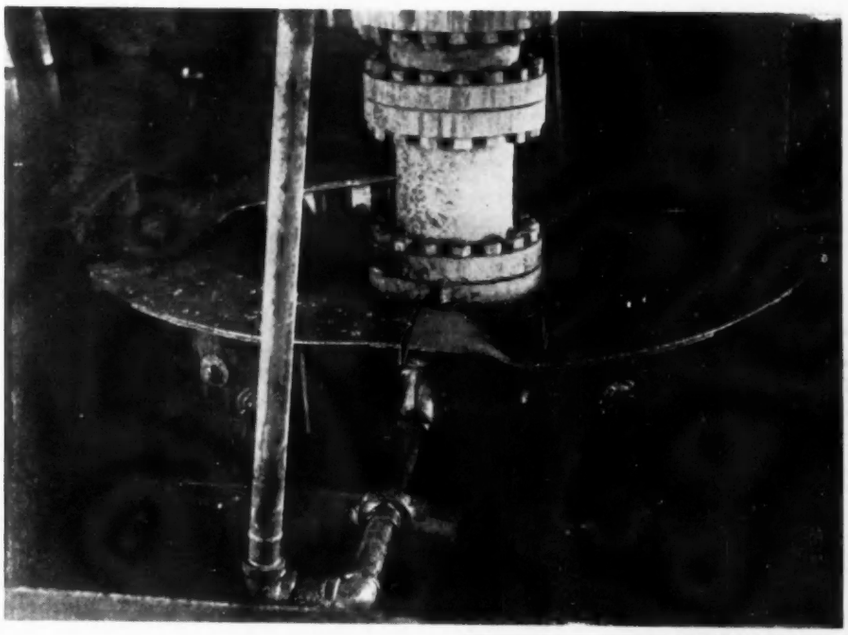
Other companies concluded that the most effective and economical means of reaching wells in marine fields is by boat, as waterways are almost always passable and, when once established, require little maintenance expense. Christmas trees thus isolated and frequently approached by boats are protected not only against storms, but also from possible damage by boats which may inadvertently collide with them. Often, guards made of piling are capped with steel superstructure equipped with gin poles as an aid to running wire lines, and lights and bright painting in con-

Wells located near banks of streams or canals are vulnerable to damage by passing tugs which often tow three or more heavily-laden barges through these inland waterways. Christmas trees of wells in areas where traffic may be damaging are sometimes protected by erecting fence-like barriers which enclose them on the channel side. Clusters of creosoted piles driven into bottom of the canal provide posts between which planks are bolted in several rows to provide a protective wall three to six feet tall. Ends of the enclosure angle toward bank to avoid forming square shoulders, thus diverting boats or colliding barges into the center of the waterway upon impact, with the least damage either to fence or shipping. Without strong protection, as visibility in the winding canals at times is impaired by fog and mist, wells along the banks and marine commercial vessels are subject to injury.



While many protective structures about Christmas trees use few piles and set low in the water to enable workover barges to approach close for simplifying rigging-up to work over wells, some wells are provided with small platforms for erecting light machines for such jobs. This brightly-colored unit is provided with a gin pole and protective superstructure, while adjoining the well is a low, level platform about six feet wide and 12 feet long, adequately sturdy for supporting a wire line unit. The platform, while not suitable for pulling tubing, furnishes convenience in running bottom-hole pressure tests, paraffin scrapers, and in performing other work of a similar nature. Structure is mounted on piling driven into the canal bottom, creosoted for protection against salt water corrosion, and usually painted in contrasting colors to attract attention of approaching boats.

Where there is no commercial boat traffic, only minimum protection against passing boats is required. Here low and sturdy creosoted piling with small floored platform has been built around a Christmas tree to expedite making minor adjustments, and a larger elevated platform has been constructed on top of slip piling to facilitate running wire line.



Hexagonally-arranged piling form part of key-way during drilling, and stand only two or three feet high. A doughnut rim is bolted to tops of the piles, with blowout preventer and other valves centered inside the circle, which has an inside diameter of nearly six feet. The douhgnut is made of three steel sections each comprising an arc of 120°, and after completion forms base upon which flooring for protective superstructure is erected, bolt holes provided as an aid to proper mounting. Usually, a circular steel rim lining is bolted inside the hexagon to prevent pollution of water by waste oils and debris.

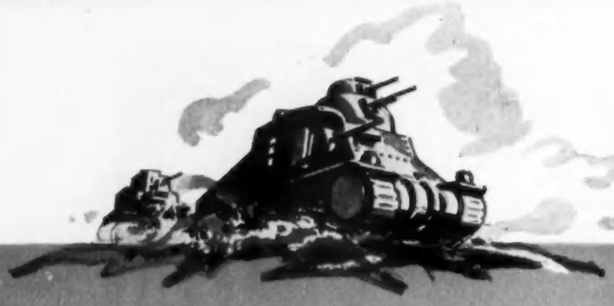
trasting colors are used in arterial waterways where traffic is heavy.

Whenever possible, heavy piling originally used as key-ways, (guides for drilling barges, adapted especially for open or unprotected waters), is also utilized as part of the protective structure around Christmas trees. Slip piling is often pulled to the desired height for flooring, while piling clusters are left untouched after completion of wells for constructing low barriers approachable by boat. All piling is creosoted and heavy, is usually 40 feet long, with a gradual taper from 12 inches in diameter at the butts to seven inches at the tips, and driven into bottom of the canal or bay for security.

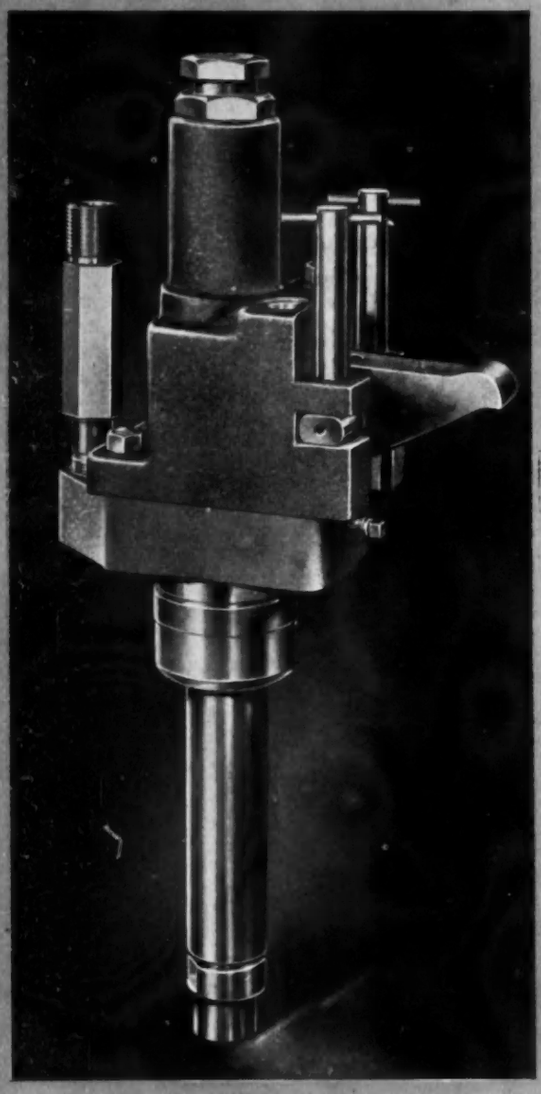
Thus again nature's challenge to oil man's ingenuity has necessitated diversion from standardized equipment, and in fields bordering the Gulf of Mexico, the oil industry finds an excellent experimental ground for answering this challenge. The result sees development of the finest equipment, with devices found for prolonging its usability and for protecting wells, boats, and marine wild life. Oil companies and engineers, always subjected to the greatest trials and development problems, have again asserted their resourcefulness.

Salt water corrosion is always a problem in Gulf Coast marine oil fields, the open space inside flange connections being particularly susceptible to its effect. One company protects these points of weakness by clamping special bands around the space, and filling with heavy lubricant to prevent entrance of water or air. Bands are made of copper lined with cork, with clamps provided for tightening. Connections are placed on the band for attaching grease gun, and after mounting in position grease is pumped into the open interior space, forming a tight seal against entrance of water or air. Refilling is not often necessary, as leakage is negligible.

Steel band about one foot wide runs around circumference of flooring, and provides base for six columns. Band is divided in two parts, and upon removal of a few bolts, the sections are separated for removal of the superstructure prior to working over well. Inner portion of flooring is grilled to provide safe footing and to facilitate drainage into waste accumulation cylinder, and the enclosed area is large enough to permit workers to manipulate valves and make repairs. Steel columns are spaced three feet apart, and are painted contrasting colors to attract attention and minimize danger to shipping. With superstructure removed for working over, the remaining structure mounted on short piling is sufficiently low to permit workover barge to approach close to well.



THE MAN-MADE



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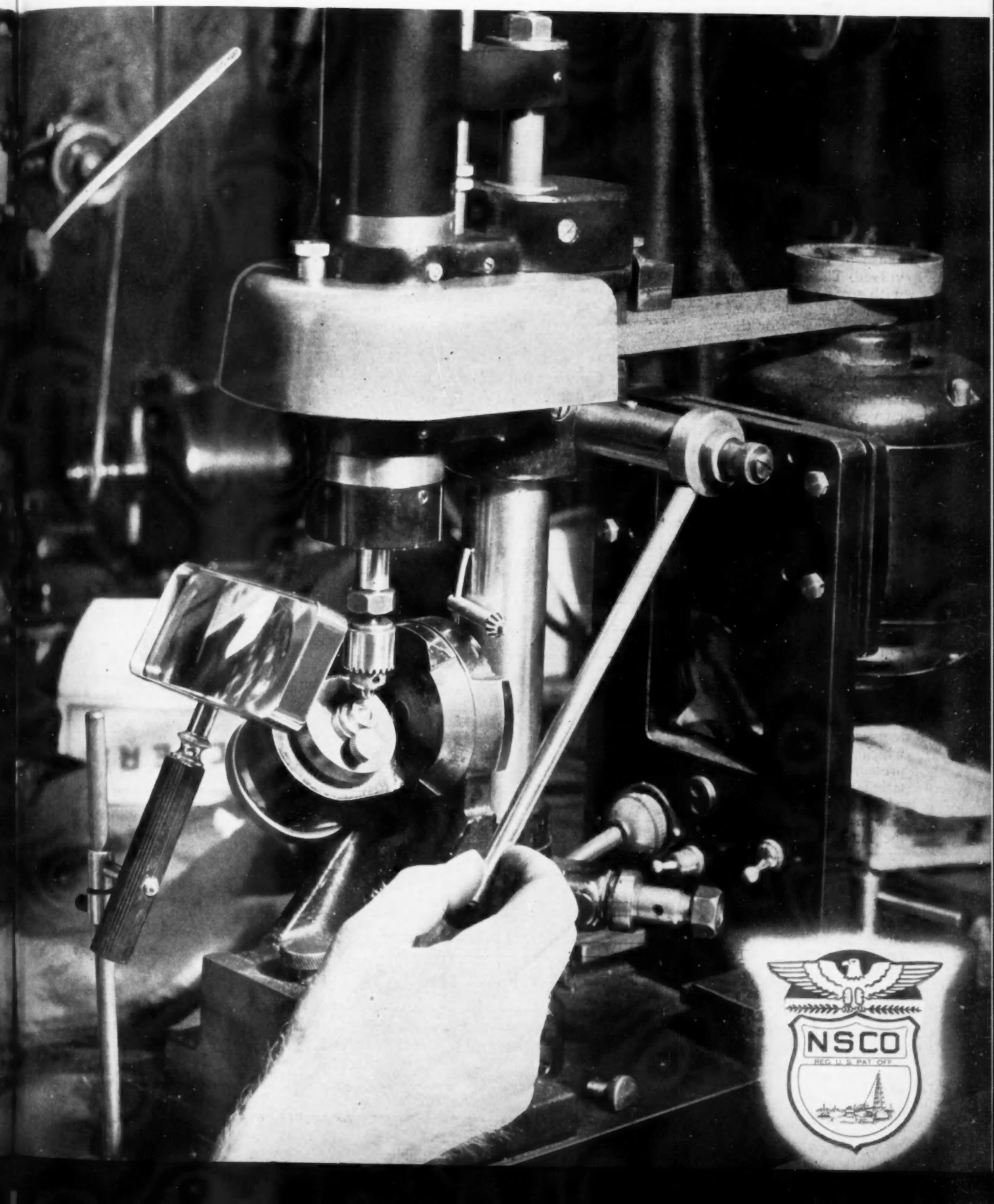
ARTERIES OF HORSEPOWER



Selection of Internal Combustion Engines

PART 3—Fuel Selection and Fuel Performance Curves

By EMORY N. KEMLOR
Associate Professor of Mechanical Engineering, Purdue University

THE fuel economy of an internal combustion engine is frequently of little importance in oil field installations. It is of course important in areas where cheap desirable fuels are not available. The selection between fuels in such areas is important because of the direct cost factor involved. The high maintenance cost with some types of fuel may make them unsuitable even though no charge is made for them.

Fuel Consumption

Fuel consumption curves are similar to horsepower performance curves in that they must be determined experimentally for each engine. The fuel consumption for a given power output is dependent on engine design features, valve design, part sizes, compression ratio, etc. The fuel consumption is normally expressed in pounds per horsepower-hour output for a liquid fuel and as cubic feet per horsepower - hour output for gaseous fuels. Fuels can normally be divided into those which are in a gaseous state at all times, those which are liquid at all normal pressures and temperatures and those which are kept under pressure during transportation and storage but which are used in the engine in a gaseous state. In the latter case, fuel consumption could be expressed in terms of either a volume or weight basis.

Figure 1 shows a typical fuel consumption curve for an engine burning natural gas. The curves as normally shown plot cubic feet of gas per horsepower-hour against brake mean effective pressure in lb./in.^{2} the brake mean effective pressure for a given speed and load can be calculated from the formula

$$BMEP = \frac{B.H.P. \times 33{,}000}{L\,A\,N\,n}$$

where BMEP = brake mean effective pressure
BHP = brake horse power
L = length of stroke in feet
A = net piston area in square inches
N = number of power strokes per cylinder per minute
n = number of cylinders

For a two-stroke cycle engine the number of power strokes per cylinder per minute, N, will be equal to the number of revolutions per minute. For a four-stroke cycle, it will be equal to one half the number of strokes per minute. For any given engine L, A, and n will be fixed and the BMEP will be equal to a constant times the horsepower divided by the speed. Figure 2 shows a curve from which the BMEP can be determined for the engine for which the fuel consumption curve is shown in Figure 1. From these two curves it is possible to work out the fuel consumption at any given horsepower or speed.

Figure 3 shows a fuel consumption curve for an engine using fuel oil. On this figure the fuel consumption curves and the horsepower curve shown in Figure 2 have been combined. The fuel consumption at any load or speed can be found by tracing from the brake horsepower to the speed, then up to the speed and across to the scale reading fuel consumption in pounds per brake horsepower hour. It will be noted from Figure 3 that the specific fuel consumption in pounds per horsepower - hour is relatively high at low brake mean effective pressures. It decreases as the BMEP increases and finally reach a minimum value at around 30-40 BMEP. It then increases again. The low BMEP values correspond to a very low percentage of load. The high specific fuel consumption at the low BMEP values results because of the low mechanical efficiency of the engine. It will also be noted that the fuel consumption varies with the speed. At both high and low speeds the consumption increases. For the engine shown in Figure 3 the best fuel consumption

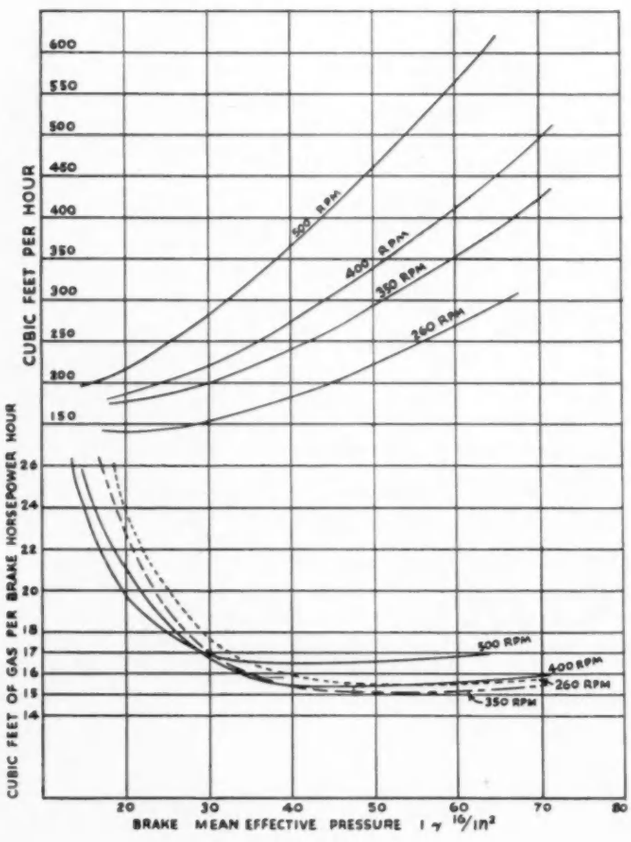


FIGURE 1

"It's up to his skilled hands to get every hour of extra rope service we put in..

Here are some helpful tips you can pass along . . . things that mean even longer life for Roebling "Blue Center" Steel Rotary Drilling Lines . . . steel saved for U. S. at War!

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Same thing applies to a wire rope. In any kind of hoisting operation, it's vital that the rope should have no slack at the beginning of the lift—else the load might be applied suddenly and then the stress on the rope will be greatly in excess of that due to the load being handled. So *don't jerk your ropes.*

Lesson Two:—a hammer weighing only a few pounds can produce a blow having the force of a couple of tons. The load on a wire rope is like a hammer—striking a blow on the rope whenever you start the load too quickly.

And it's the same when the rope is going the other way. When even a light load is stopped suddenly while being lowered, the rope is subjected to a much greater strain than the equipment could apply to it in hoisting. So *don't jolt your loads.* Brakes should be applied smoothly and uniformly, and eased off at the slightest sign of "grab." Brake your load over a longer period and your rope will last over a longer period.

In general, shock loads will remove from the rope the very elasticity that is put in to absorb normal impact, while careful handling will preserve the rope's elasticity and keep it in condition to deliver long life.

Of course, the way a machine is run always affects its general maintenance. It's a well-known fact that some people are harder on machinery than others. An operator can push a machine (and a rope) just so far to get extra work out of it—beyond that, the punishment takes its toll of both the machine and the rope—and breakage begins to cost more than the extra work is worth. But in these days when rope steel is vital to the war effort, *wire rope must not be abused.*

Lesson Three:—a pitch-fork was not made to shovel sand. Likewise, "borrowing" ropes is very seldom practical. In these times of priorities and shortages, there is sometimes a temptation to "switch" ropes from one part of a rotary operation to another. "Borrowing" wire rope should be

avoided, as each particular rope is made to do a specific job. Remember that a "borrowed" rope will never give full service when it is used on a job for which it was not intended. In order to obtain maximum service, keep a rope on the job for which it was recommended and put the right new rope on the equipment that needs it.

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More ways to help you conserve wire rope coming in this space next month.

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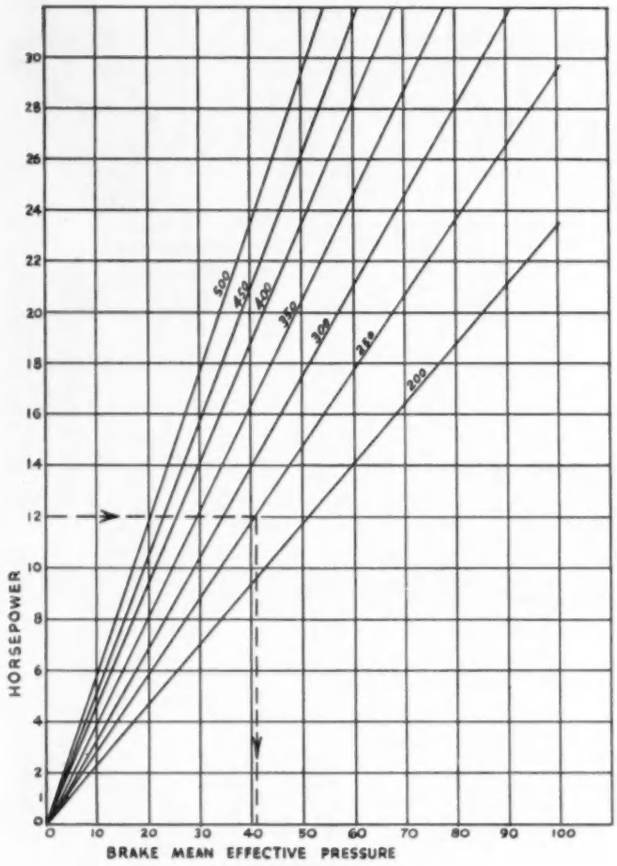

FIGURE 2

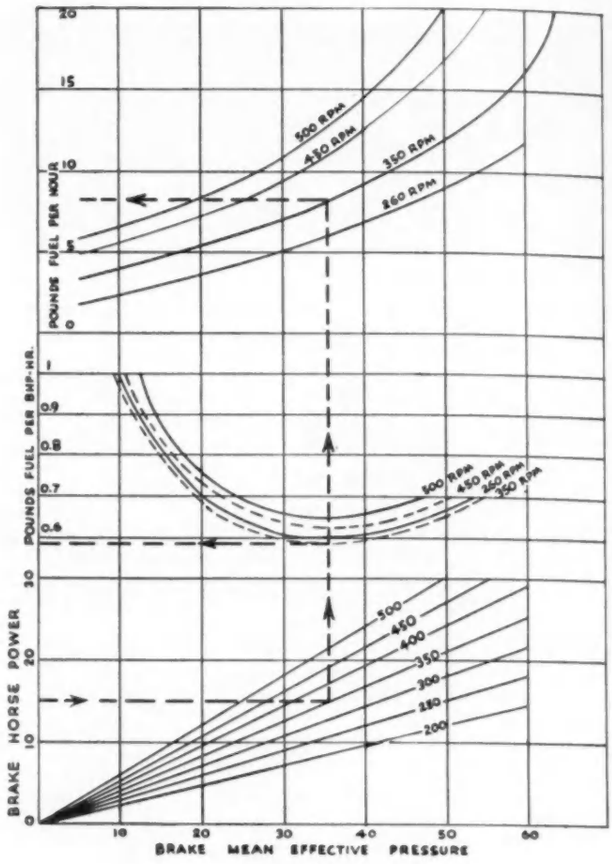

FIGURE 3

at any BMEP is found at 350 rpm.

If the fuel consumption is known for a given type of engine for several different types of fuel, a comparison on a cost basis can be made. Such a comparison can be readily made by use of a chart as shown in Figure 4. This chart has been constructed to cover butane, natural gas, gasoline and Diesel fuel oil. It gives the cost either in cents per horsepower-hour developed or in dollars per 24-hour day, when the power which will be developed is known. Because of the wide difference in specific gravity between butane and gasoline a separate scale is necessary for each of these fuels. Gasoline and fuel oil have been put on a common scale since their specific gravities and heating values are not sufficiently far apart to cause any appreciable error.

The procedure in the use of this chart is as follows: First determine from the performance curve, the operating speed and horsepower which the engine must deliver. (See previous article.) Then knowing the horsepower and speed determine the BMEP from the formula given or construct a chart similar to that shown in Figures 2 or 3 from which BMEP can be determined graphically. If the BMEP and speeds are known, the fuel consumption per horsepower hour can be found from curves similar to those shown in Figures 1 or 3. When the fuel consumption per horsepower-hour is found, Figure 4 can be used to determine the cost. The following examples for gasoline, butane, fuel oil and natural gas are for illustrative purposes only and are not intended to imply any advantage of one fuel over another or to represent any actual comparison of fuels. Any actual comparison must be based on actual engine test data.

Consider as an example a gasoline engine having a fuel consumption of 0.8 pounds per horsepower-hour when developing 40 horsepower continuously. The cost of gasoline is to be 12 cents per gallon. To find the cost of fuel in cents per horsepower hour enter the chart on the upper right hand scale marked "Cost of Gasoline or Fuel Oil in Cents per Gallon," then trace down to the diagonal line marked 0.8 under the diagonal title marked: "Fuel Consumption—Gasoline or Fuel Oil" in pounds per horsepower-hour; then trace to the right to the scale marked "Fuel Cost" in cents per horsepower-hour and read 1.5. To find the cost per 24 hours of operation, trace to the right from the intersection of the 12c/gallon line and the diagonal 0.8 pounds per horsepower-hour to the diagonal line marked 40 horsepower; then down and read $14 per day.

The cost for a Diesel engine having specific fuel consumption of 0.7 pounds per horsepower-hour when developing 50 horsepower when fuel oil costs 7 cents per gallon can be found as in the previous example. Tracing down from the upper scale as indicated by the dotted line, starting at the line marked "7 cents per gallon" to the line marked "0.7 pounds per horsepower-hour" gives a cost of 0.74 cents per horsepower-hour as shown on the right hand scale. By tracing down from the intersection of this line and the line marked 50 horsepower, the cost per 24-hour day is seen to be $8.50 per day.

The cost for an engine using butane is determined in the same manner as for gasoline or Diesel fuel, except that the cost scale is entered at scale on the upper left

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hand side, marked "Cost of Butane in Cents per Gallon." The example as indicated by the dotted line is for a fuel consumption of 0.6 pounds per hour when developing 25 horsepower and a cost of 6 cents per gallon. For these conditions the cost of fuel is 0.7 cents per horsepower-hour or $4.10 per day. The chart can be used for determining the cost of butane as a fuel even though it is vaporized and fed to the engine as a gas. The only requirement is that the fuel consumption be known in pounds per horsepower-hour. If the fuel consumption using butane is given in cubic feet per horsepower-hour, the method described below for natural gas should be used.

One factor which is difficult to evaluate when using natural gas as an engine fuel is that of correcting for gases of different heating values. The example worked out in Figure 4 is for a gas of any heating value provided the fuel consumption is for a gas of the same heating value. The example shown is for a case where natural gas costs 25 cents per 1000 cubic feet, the fuel consumption is 20 cubic feet per horsepower-hour when the engine develops 20 horsepower. The cost is found by tracing up from the lower scale, as is indicated by the arrow, from a cost of 25c/1000 feet^3 to the line marked 20 under "Fuel Consumption — Natural Gas." The fuel cost in cents per horsepower-hour is seen to be 0.5 cents. By tracing across to the line marked "20 horsepower" and down, a cost of $2.40 per day is found. The cost for any gaseous fuel having a different cost and heating value can be estimated by correcting both to the same basis as for the fuel tested. For example, if an engine is tested for gas having a heating value of 1000 Btu per cubic foot and at the conditions investigated has a specific fuel consumption of 20 feet^3 per horsepower-hour, the equivalent fuel consumption when using a gas having a heating value of 900 Btu per cubic foot might be estimated as being $20 \times \frac{1000}{900} = 22$ cubic feet per horsepower-hour. This fuel consumption value is purely arbitrary but does give an approximate means of comparison. The only safe method of handling such cases is to make a test with the fuel to be used.

The scale at the right hand side marked "Fuel Cost in Cents per Horsepower-hour" offers a very convenient basis for checking the relative costs of fuel. This scale shows that an engine having a fuel consumption of 0.6 pounds of butane per hour at a cost of 6 cents per gallon would have the same fuel cost as one having a fuel consumption of 20 cubic feet of gas per horsepower-hour at a cost of 35 cents per 100 cubic feet.

While fuel costs in themselves are important, the effect of fuels on the operating costs, both repair or maintenance, and operating labor must be considered carefully. The compression ignition engines frequently use a cheaper grade of fuels than the spark ignition engines. The compression ignition engine will usually have a higher maintenance expense than the spark ignition engine. In some cases where considerable hydrogen sulfide is present in the gas, the use of natural gas may not be economical because of the high maintenance expense even though there is no charge for the gas. The same general condition may be true if crude oils with high percentages of salt water or hydrogen sulfide are used. Each of these problems must be individually analyzed since they are dependent on relative fuel costs, availability of skilled mechanics and the type of application.

The type of fuel which is to be used will affect the type of engine to be purchased. The efficiency of an internal combustion engine will increase with the compression ratio. The compression ratio is however, fixed by the fuel to be used. If it is made too high, detonation or self-ignition will take place because the temperature in some part of the cylinder reaches the ignition temperature before the flame has had time to progress all the way across the cylinder. Anything which would reduce hot spots in the cylinder of a spark ignition engine would tend to reduce the possibility of detonation. These factors are in general determined by design features such as shape of combustion chamber, turbulence in combustion chamber, rate of heat transfer in cylinder, head and piston, design of cooling system, etc. For these many reasons, the selection of a compression ratio for a given type of fuel must be left to the experience of the designer. For the same fuel, different engines may operate better on a different compression ratio. Straight run gasolines and natural gases detonate easily and must be used with low compression ratios. Butane can be operated at much higher compression ratios. To reduce the tendency to detonate additives can be used to permit operation at higher compression pressures.

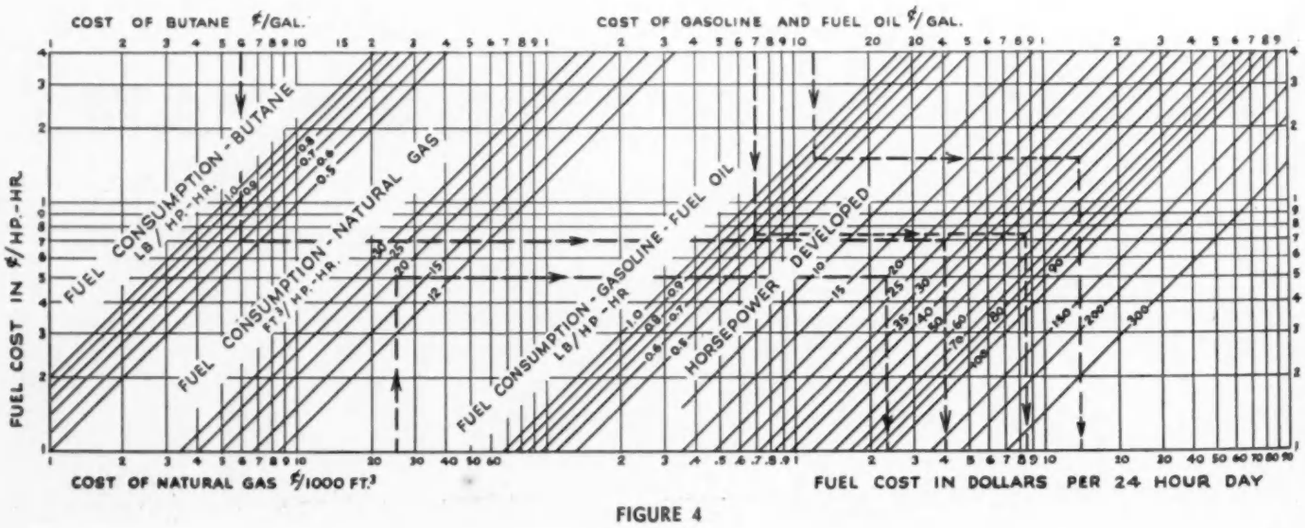
COST OF BUTANE ¢/GAL.
COST OF GASOLINE AND FUEL OIL ¢/GAL.
FUEL COST IN ¢/HP.-HR.
FUEL CONSUMPTION - BUTANE LB./HP.-HR.
FUEL CONSUMPTION - NATURAL GAS FT.³/HP.-HR.
FUEL CONSUMPTION - GASOLINE - FUEL OIL LB./HP.-HR.
HORSEPOWER DEVELOPED
COST OF NATURAL GAS ¢/1000 FT.³
FUEL COST IN DOLLARS PER 24 HOUR DAY

FIGURE 4

California Fuel Oil Situation Demands Higher Drilling Rate

NORMAL drilling rates in California's heavy-oil areas are insufficient to meet demands being made on the industry for fuel oil, and consequently an increase in drilling of at least 80 percent over the normal rate should be undertaken in 1943 and continued heavy development work prosecuted in succeeding years to maintain fuel-oil output at a level approximating demand.

This is the primary recommendation made as a result of a study of the California fuel-oil reserve and production situation undertaken by the Petroleum Coordinator's office for the Fifth District in conjunction with the industry in California, which included an extensive and careful survey of the state's heavy-oil reserves and producing facilities.

The report, which was compiled and forwarded to Washington where early recommendations are expected to be made on the basis of the findings, points out that there remains in California sufficient proved acreage, productive of heavy oil, to permit drilling approximately 2685 wells on proposed spacing patterns.

Steel requirement for the necessary wells is estimated at 168,000 tons, or an average of approximately 62 tons per well. Total oil production to be made available over a 5-year period is estimated at 214,000,000 barrels, or an average of 117,144 barrels daily.

Trends shown by the data assembled indicate that current rate of productive capacity of heavy-oil wells in California should be maintained at more than 300,000 barrels daily. The normal annual drilling program in the heavy-oil fields will not provide a sufficient number of wells to maintain the 300,000 barrels daily rate, the report states.

The report recommends a development rate in the state's heavy-oil fields be increased about 80 percent in 1943. All restrictions on development of heavy crude, other than those not warranted through high steel factor, should be removed, the report also recommends.

Specific recommendation contained in the report points out that oil is being produced at a more rapid rate than it is being discovered and demand for heavy oil is increasingly greater than the supply. It is therefore recommended that:

1. Wildcat drilling be encouraged in every possible way and top priority assistance be given for the drilling of exploratory wells.

2. All economically producible wells be rehabilitated and equipped where necessary.

3. The development of undrilled acreage, in fields capable of producing heavy oil, be stimulated to meet the demand made on this most important source of fuel oil.

Existing orders are uniformly restrictive in their control of field operations, the report declares, and do not permit preference to projects most capable of meeting war demands. The realization of these demands should be accomplished by granting timely, practical exceptions to the current orders.

Emphasis is placed on the fact that California provides the only supply of petroleum west of the Rocky Mountains. The necessity for increasing this supply in a location so strategic to the war effort is paramount.

Strong encouragement for material increase in all exploration activities is essential.

Discoveries Decline

The serious decline in the discovery rate of new fields in California supports the belief that many more wildcat wells must be drilled if any of the remaining undiscovered oil fields are to be found in time to produce during the present emergency. A rate of discovery greater than 300,000,000 barrels per year is necessary to meet the apparent war demands.

Heavy-oil reserves of 75 fields are estimated as of January 1, 1942, at 897,000,000 barrels below 24 gravity. These reserves represent underground storage from which the rate of withdrawal is limited by the maximum ability of the constituent wells, as now equipped, to produce.

The productive capacity of each pool or area was estimated by years from 1942 to 1946 inclusive, and of these reserves, 479,000,000 barrels, or 53 percent, are estimated as producible within the next 5 years. Productive capacity for 1942 of 285,000 barrels daily will decline to less than 180,000 barrels daily for 1946, the report predicts.

A total of 1439 wells are considered as projects for rehabilitation in the fields surveyed, and their output could be increased 32,010 barrels daily. No appreciable increase in reserves is expected from rehabilitation work; a greater decline rate is to be anticipated, so that capacity production for 1946 is estimated to be 180,000 barrels daily.

Rehabilitate Wells

A total of 8248 tons of steel will be required to rehabilitate all proposed wells. Out of the total of 1439 wells, which are considered projects for rehabilitation, 578 are now producing at rates limited by the equipment in place. Repair or replacement of equipment will permit these wells to produce at capacity.

Approximately half of the estimated total increase in production can be secured from these 578 wells, and will require 40 percent of the total steel proposed for the rehabilitation program. The remaining 861 shut-in wells furnish the other half of the estimated increase in production and will require 60 percent of the steel. Under present economic conditions, 799 idle wells cannot be considered projects for rehabilitation.

The study indicates that the total product demand on the Pacific Coast will be over 700,000 barrels

daily in 1942, which will approach the all time peak of 1929. The demand will be met by California production of all types of crude, with small additions or receipts from other sources. The required products will be made from these crudes and the related amounts of these products will be extremely variable and not subject to prediction from the data derived in the study.

It is true, the survey points out, that whether the refineries process either light or heavy crude, the products yielded will depend to a great extent upon the facilities available and the process used However, immediate objectives will best be served by producing, if possible, crude oil that will yield a minimum of gasoline and a maximum of heavy fuel. This objective will be modified by that amount of light crude which will necessarily be produced in supplying the demand for gas. In some cases the refiner will have no option and must use the crude available to meet the demand for products. Nevertheless, everything possible should be done to reduce production of commercial gasoline by using the highest percentage of crude of low gasoline content.

It is estimated that demand for residual fuel oil in the Pacific Coast territory will be greatly increased within the next 12 months. This demand, which at present is 314,000 barrels daily, already represents the largest part of the total demand for all petroleum products in the Pacific area and exceeds supply by 52,700 barrels daily.

It can be seen that demand for heavy fuel has exceeded supply during most of the past 2½ years. This deficiency is reflected in a steady decline in inventories over that period, reducing the total above-ground reserves of residual fuel to 48,500,000 barrels on March 31, 1942.

Storage Declining Fast

If the current deficiency of supply continues, those inventories will be exhausted in about 2½ years, assuming that all of the oil in storage is suitable for use as fuel. Should some of it be unfit for use, which is now a known fact, or should the difference between supply and demand widen, the day of exhaustion of above-ground reserves will come much sooner. Considered from the standpoint of current demand, the present inventories would last 153 days if new supply were completely shut off and all of the stored oil were usable.

To supply an anticipated wartime demand running to 300,000,000 barrels a year, and to provide a desirable additional reserve, the study states that "it is essential that California discover oil at a rate necessarily greater than 300,000,000 barrels annually.

"The present war emergency and the strategic location of California require the expenditure of the effort, money and material necessary to accomplish this result."

California's heavy-oil reserves represent 27.1 percent of the total state reserve of 3,315,962,388 barrels.

A total of 13,311 wells in the state are listed as capable of producing heavy oil. They were listed as follows:

Wells capable of production (effective wells)	11,651
Shutdown (ineffective) wells	861
Idle wells (ineffective wells which cannot be economically rehabilitated)	799
Total	13,311

Of the producing wells, 578 require changes in equipment or redrilling to obtain maximum production.

The 861 ineffective wells proposed for rehabilitation are estimated to have a capacity of 15,000 barrels daily, and will utilize 5000 tons of steel. These wells have been shut-in for a number of years, some since 1927. It is safe to assume that there has been much deterioration of surface equipment, the extent of which cannot be known until remedial work is started. Redrilling will not be warranted on most of such wells under present economic conditions.

The 799 idle wells which cannot be economically rehabilitated, constitute the remainder of the ineffective wells. It is probable that most of these wells should be abandoned and all casing and other material salvaged for use which is more essential to the war effort.

Although attempts were made to estimate the cost of all proposed rehabilitation, estimates were secured on only 320 of 1439 wells considered worth rehabilitation. These data were analyzed and classified according to the rehabilitation cost per barrel of oil recovered during the first 5 years, thereafter. These unit costs compared with the 5-year recovery on a cumulative basis from the lowest rehabilitation cost per barrel to the highest, indicated the following general conclusions:

1. Fifty percent of the 5-year recovery can be secured at a rehabilitation cost not to exceed 5 cents per barrel.

2. Sixty percent of the 5-year recovery can be secured at a rehabilitation cost not to exceed 10 cents per barrel.

3. Seventy percent of the 5-year recovery can be secured at a rehabilitation cost not to exceed 20 cents per barrel.

As the rehabilitation of wells is the quickest means of securing additional heavy-oil production, and as many of the proposed projects require a relatively small amount of steel to secure this additional production, the following recommendations are submitted:

1. That all applications for exceptions to Conservation Order M-68 covering the rehabilitation of shutdown or producing wells be immediately approved provided the steel factor is not less than 1.0 barrels daily per ton of steel, or 1000 barrels of 5-year recovery per ton of steel.

2. That paragraph (c) (1) of Conservation Order M-68 and paragraph (a) (14) and (a) (15) of Preference Rating Order P-98, be amended or reinterpreted as follows:

"Those provisions relating to replacement, maintenance and repair be altered so that no application for exception will be required for rehabilitation on existing wells in order to maintain or restore the normal production from such wells, regardless of the bookkeeping methods used in accounting for the cost of such rehabilitation."

Should Space Closely

California heavy-oil fields require close spacing in order to produce a high percentage of the recoverable oil in the ground in a reasonable time. Oil that cannot be produced in the next few years, say five to be definite, will be of little value to the present war effort. Therefore, wells should be drilled on a pattern such that the density may be increased from time to time as the demand for the oil from a particular region or district is above productive capacity. It is logical to drill wells closely spaced if oil is in demand and to widely space where the production is required to be

curtailed because of lack of market.

A total of about 2685 wells which will produce heavy oil remain to be drilled in California on proved oil lands. The number estimated is considered to be that from which sufficient oil can be recovered to return the required investment. There are other wells that could be economically drilled if the price of oil was materially increased but the majority of these would not be worthwhile when the utilization of steel is considered.

Until total reserves are greatly depleted, an expenditure of 40 tons of steel in a shallow well that would produce 10,000 barrels in five years, 1 ton of steel for 250 barrels of oil, would not be justifiable even if the price of oil were sufficiently high to return the cost in 5 years. Increased drilling that would result from high-priced oil would be best diverted to exploratory work, rather than to the development of areas of small productivity.

Steel for the drilling of the proposed wells would amount to 168,000 tons or an average of about 62 tons per well. This is a minimum figure and in order to meet this figure, it will be necessary to exercise rigid control over tankage, line pipe and casing sizes and weights.

Estimates prepared indicate that a total of 213,789,000 barrels of oil, or an average of 117,144 barrels daily, can be made available over a 5-year period, by the program outlined for drilling 2685 wells.

The initial settled production of the average well considered is about 60 barrels per day; therefore, about 1650 wells would have to be drilled to increase the state production of heavy oil by 100,000 barrels daily. Exclusive of the Coastal Region, the most prolific large areas suitable for intensive development are the Wilmington field for the Los Angeles area refineries, and Mt. Poso-Round Mountain fields for San Francisco area demands. By selective drilling in such areas, it will be possible to obtain a production of 100,000 barrels daily from less than 1000 wells. Consideration should be given to a development program in the Elk Hills Naval Petroleum Reserve, which would make it available as an emergency source of production.

On the basis of existing producing wells, and predicated upon a daily demand for fuel oil averaging 300,000 barrels, the 1943 deficiency in fuel would average 29,468 barrels, increasing to a shortage of 65,705 barrels daily in 1944, to 95,773 barrels daily in 1945, and to a shortage of 122,186 barrels daily in 1946 when the state's fuel oil production would have shrunk to 177,814 barrels daily.

Fuel-oil-grade crude was considered on basis of 23.9 gravity and below. In 1940 wells completed in this gravity classification numbered 326, and in 1941 totaled 485. Completions for 1942 are expected to run to 500 and the recommended rate of drilling for 1943 would call for 900 completions, and for 1944 800 completions.

The report was submitted to D. R. Knowlton, director of production, Office of Petroleum Coordinator for War, on May 29, last, under the signature of W. H. Osgood, Director of Production, District No. 5, and was titled "Heavy Oil Survey of State of California." In submitting the report, Osgood declared:

"The present war emergency requires the petroleum industry to provide, immediately and for an indefinite period, abnormally large quantities of special petroleum products essential to modern warfare. The strategic and logistic proximity of California to the Pacific war area places a particularly heavy responsibility on the industry of this state. Originally geared to provide motor gasoline for peacetime activities throughout Pacific Coastal areas, the facilities of the exploration, development and production branches of the industry are now being rapidly changed to meet the present emergency. The necessity for an accelerated and sustained exploration and development drilling program and means of encouraging this program is indicated.

"Discoveries of new oil in California during the last 20 years, although great in total quantity and more than adequate to meet past and current requirements, have not been sufficiently large and consistent to provide a safe backlog for increasing demand from either normal peacetime or present emergency war conditions. The discovery rate since 1936 has been far too low, having provided no major fields for present and future development . . ."

WASHINGTON ROUNDUP

[*Continued from page 16*]

out the major function of the materials division, which is that of planning the most effective use of new material, equipment and supplies required by the industry.

The change of name of the Conservation Division, Deputy Coordinator Davies explained, was motivated by a desire more explicitly to describe the part it assumes in the task of coordination of insuring the maintenance of adequate reserves through the conservation of known deposits and by promoting exploration. He was selected for his new position because of the value of his experience in the oil company's purchasing department.

Appointment of Arthur B. Anderson, director of the Minnesota state petroleum division, as special assistant to Joel Dean, chief of the OPA fuel rationing division, has been announced by Price Administrator Henderson.

Anderson, on leave of absence from his Minnesota position, will act as liaison officer between OPA and the state gasoline tax administrators in the gasoline rationed area.

OPA is building plans for a continuous check on the movement of gasoline from supplier to dealer to consumer under the new rationing system which goes into effect July 22. OPA records of sales will be checked against those kept by the state gasoline tax administrators to determine whether there is any discrepancy which would prompt an investigation to disclose any leaks in the coupon system.

RATIONING: A distinctly unsatisfactory rationing situation, with motorists finding their ration cards of little value because stations have no gasoline, showed no indications of future improvement before permanent rationing goes into effect in the East July 23.

The situation was canvassed July 2 by Representative William P. Cole, Jr., of Maryland, chairman of the oil group of the House Interstate and Foreign Commerce Committee, and other members from the rationed states at a conference with OPC officials, at which the Congressional group sought some relaxation of restrictions.

But another group from the

northern New England delegations was told by Price Administrator Henderson July 1 that it would be impossible to lift the restrictions to save that area's vacation trade, at the same time that J. R. Parten of OPC was warning a Senate Commerce Subcommittee that they could expect rationing of fuel oil as well as gasoline next winter.

Meanwhile, Mayor F. H. LaGuardia of New York, following long-distance telephone conversations with Washington officials, said he was hopeful of securing an amendment to the latest price order permitting the application of compensation for excess transportation to all means of transportation from the Middle West.

Reports of his views started discussions in the Capital of the possibility that Henderson might amend the order to allow companies not participating in the transportation pool to share in its benefits, spurring them to increasing their shipments in to the Eastern area.

Under the curtailment program which has accompanied rationing, stations get their supplies in ten-day lots. A large proportion of stations are cleaned out within a short time, others try to take care of their regular customers and turn strangers away and only a few have sufficient stock to enable them to sell right through the ten-day period.

On Sunday, June 28, only one or two stations were open in Washington. Many stations were entirely sold out by Saturday and it was difficult to get gasoline until new supplies were delivered July 1.

This situation has given rise to fears of a price war, and there was pressure for either some restriction of supplies going to any one dealer or a prohibition against price cutting. Failing such protection, station operators asserted, a financially strong operator, by reducing prices, might be able to force out of business stations which are barely getting along.

The new ration books which will be distributed to car and truck owners next month in anticipation of the July 23 rationing, will be "tailored" to meet the needs of the individual applicant. But the big question is whether supplies are to be "tailored" to meet the rations allowed or are to be delivered on the present curtailment basis. The latter, it is contended, would mean there would not be enough gas to go round, and it is reported that there is a difference of opinion between OPA and OPC on this point, with the latter holding out for abandonment of the restrictions on deliveries.

With the initiation of permanent gasoline rationing this month, L-70, providing for the curtailment of gasoline deliveries to filling stations, will be revoked.

The order, limiting deliveries to 50 percent of last year, on a modified basis, has been the source of much complaint from rationing boards, officials and workers in defense areas who declared it makes it impossible to meet allowables for ration-card holders.

And it has been necessary to relax it so that adequate gasoline could be provided to meet the needs of defense workers in a number of localities.

Under the new system, filling station operators will receive supplies on the basis of the coupons they take from customers and turn in to their suppliers.

RATION VIOLATIONS: Approximately 100 eastern gasoline stations have been "padlocked" for periods ranging from 15 to 30 days, for violations of rationing orders, and the Department of Justice on June 29 filed the first civil complaint seeking enforcement by injunction of orders of WPB.

Stations selling gasoline to customers without punching ration cards or delivering more gasoline than the cards call for are being penalized by the Price Administration by cutting off their supplies.

The WPB case, brought in Charleston, S. C., was based on charges that a station operator purchasing his full quota from one company bought an additional supply from a wholesaler. The wholesaler, himself, was alleged to have made many violating sales to stations which had used up their quotas.

The case was handled for the Government by Tom C. Clark, chief of the war frauds unit, who warned jobbers and wholesalers of gasoline that violation of WPB orders would be "strenuously prosecuted."

"Violations of the orders subjects the violator to criminal prosecution as well as injunction," Clark said. "It is our purpose to enforce these limitation orders and if necessary criminal prosecutions will be instituted."

OFFSHORE OIL: A new effort to seize the underwater mineral rights off the Pacific and Gulf coasts, unsuccessfully pressed by the Navy over a long period prior to the war, was launched July 1 by Senator Theodore G. Bilbo of Mississippi with the introduction in Congress of a bill declaring to be public domain all submerged lands in the Gulf of Mexico to a distance of 75 miles from low water mark along the coast from the mouth of the Mississippi River to the northeastern boundary of Calhoun County, Texas.

All such lands would be declared a petroleum reserve for military and naval purposes, to be known as Gulf Coast Petroleum Reserve No. 1.

The bill would not apply to any lands which, on the date of its enactment, were owned by any state, individual, business organization or association.

In an explanation of his bill on the floor of the Senate, Bilbo said that "innumerable" salt domes and oil deposits are known to exist in the area covered by the measure. The limit of 75 miles, he said, was taken because the depth of water would make operations beyond that distance impracticable.

Bilbo expressed the fear that our known oil reserves, vast as they are believed to be, may be insufficient to get the country through the war, and asserted that it is essential steps be taken to provide against the day when heavy production for war purposes depletes them.

"With a reserve thus set up in the Gulf Coast area for strictly military purposes, a reserve upon which the military authorities could draw in the event of an emergency, production could be had of a supply of the finest-known quality of lubricants and high-test aviation gasoline," he said. "Such a possibility should not be overlooked at this critical time.

"Consideration should also be given to the fact that this Gulf area is probably the only place in the world where a military reserve

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IT TAKES THE DAILY "ALLOWABLE" OF A TEXAS OIL WELL TO MAKE THIS BABY HUM!

When the four powerful motors of this big B-19 get going, the finest gasoline in the world flows through their carburetors at a rate that would astound Mr. Average Motorist. Where he deals in miles per gallon, these ships use gallons per minute. Imagine motors that consume all the high octane gasoline available from the daily allowable of one Texas oil well just to get the ship warmed up and into the air.* Imagine, at that rate of consumption, the thousands of oil wells and hundreds of refineries necessary to keep 'em flying to victory. Imagine, too, the thousands of oil wells throughout the United States that farsighted operators have drilled . . . wells that were drilled to make and keep our transportation system the best and most highly mechanized in the world. And since modern warfare *is* transportation and modern transportation depends on oil, our oil supplies will be a major factor in winning the war.

We have enjoyed being associated with oil men . . . to have served them for the past 45 years . . . and trust another 45 years from now we will still be serving them with the best drilling and production equipment that experience and desire will enable us to build.

**This estimate is based on a South Texas high octane crude oil field where the daily allowable is approximately 20 bbls. It is figured that 15% of the crude is suitable for 100+ octane aviation gasoline. Regular processing gives an estimated finished production of 126 gallons of aviation gasoline.*

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could be created without interfering in the slightest with private rights, private property rights of corporations and/or individuals.

"No citizen owns any interest near or adjacent to the proposed reserve, nor could anyone claim any drainage from it or make any claim of having been deprived of any right or privilege as a result of operations in the reserve. Anywhere else upon lands of this country where a military reserve might be created, drainage of oil and abuse of the rights of private citizens might occur.

"Should the present war continue for five or ten years, as predicted by some, it is certain that these reserves will be needed."

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RUBBER DRIVE: Disappointing results of the rubber salvage drive reported by Coordinator Ickes and PIWC Chairman Boyd led President Roosevelt on June 29 to order continuation of the campaign to July 10.

Although estimates placed the amount of scrap rubber in the country from 500,000 to 10,000,000 tons, only 219,000 tons were collected up to June 27. This was more nearly in line with WPB and OPA calculations that the actual scrap available would be about 300,000 tons.

Even Ickes, who picked up a large rubber mat on the floor in the President's executive office with the help of a reporter, while other newspapermen and White House police looked on and laughed, couldn't get the collections up to anything like the figure hoped for.

Ickes, incidentally, "got away" with the White House mat, Presidential Secretary Stephen Early assuring that no effort would be made to get it back and it was cheerfully contributed to the drive.

Because of the poor showing made in the campaign, Ickes and Boyd suggested that the drive be continued and that renewed efforts be made to induce "hoarders" to give up rubber goods for which they had little or no need or use.

The West Coast and Rocky Mountain region continued to far outstrip the remainder of the country in the volume collected per capita, especially noteworthy was the results achieved in that band of states comprising the northern boundary of the country from the Pacific Coast eastward to the Great Lakes.

Nevada was the leading contributor per capita with 20.09 pounds, followed by Montana with 13.42 pounds per person, Idaho with 10.73 pounds, Oregon 10.44 pounds and North Dakota with 10.04 pounds per capita.

The collection in the east continued to lag, Vermont being the only area collecting more than 5 pounds per capita. The collection was also slow in the south, where Florida led with slightly less than 5 pounds per capita.

OPA prepared to follow the salvage drive with an appeal to motorists to sell RFC any extra tires beyond five that they might have at prices not above present ceilings. Officials estimated it may be possible to collect 3,000,000 tires in this way and warned that tires may be requisitioned if the campaign is unsuccessful.

WPB officials were represented as "annoyed" at what they consider a lack of effort on the part of the tire industry to find a substitute for rubber, but in turn were the target of charges from Congressional sources and some industrial quarters that the attitude of some federal administrative officials is the real bottleneck in synthetic rubber production.

Bills designed to speed up production of synthetic rubber from grain alcohol are being pressed in Congress, but there is evidence of growing demand for utilization of all practicable methods of making rubber substitutes without regard to sectional or industrial advantages.

Scrap Rubber Collection Totals June 15 Through June 27

STATE	Tons	Lbs. Per Capita
Alabama	1,580	1.12
Arizona	2,205	8.84
Arkansas	2,555	2.62
California	21,596	6.25
Colorado	2,357	4.20
Connecticut	3,925	4.59
Delaware	269	2.01
District of Columbia	410	1.24
Florida	4,319	4.55
Georgia	2,750	1.76
Idaho	2,816	10.73
Illinois	10,000	2.53
Indiana	7,502	4.38
Iowa	6,100	4.81
Kansas	5,200	5.77
Kentucky	3,981	2.80
Louisiana	1,970	1.67
Maine	920	2.17
Maryland	1,307	1.44
Massachusetts	5,004	2.32
Michigan	8,500	3.23
Minnesota	8,153	5.84
Mississippi	1,500	1.37
Missouri	5,602	2.96
Montana	3,750	13.42
Nebraska	3,955	6.01
Nevada	1,105	20.09
New Hamnshire	905	3.68
New Jersey	2,106	1.09
New Mexico	1,353	4.52
New York	7,163	1.06
North Carolina	3,070	1.72
North Dakota	3,224	10.04
Ohio	10,000	2.90
Oklahoma	9,001	8.09
Oregon	5,689	10.44
Pennsylvania	5,500	1.11
Rhode Island	834	2.34
South Carolina	2,011	2.12
South Dakota	2,125	6.61
Tennessee	4,364	2.99
Texas	15,212	4.74
Utah	1,653	6.01
Vermont	1,120	6.24
Virginia	2,285	1.71
Washington	7,350	8.47
West Virginia	2,163	2.27
Wisconsin	7,881	5.02
Wyoming	717	5.71
Hawaii	541	2.50
Grand Total	218,998	3.32

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NEW SCRAP DRIVE: Conclusion of the current rubber scrap drive on July 10 will be followed immediately by initiation of a still more intensive campaign designed to gather every possible ounce of scrap metal, especially iron and steel, rubber and other waste materials which will flow through regular channels of trade. Included will be waste fats and, in selected localities, tin cans.

Plans for the campaign, which is to start July 13, were announced by WPB Chairman Donald M. Nelson and Lessing J. Rosenwald, chief of the Bureau of Industrial Conservation. Every industrial plant in the country is to be brought into the drive, and the 12,000 state and local salvage committees will be backed up by a national advertising program sponsored by the iron and steel industry, which has raised $1,500,000 for the purpose, and the glycerine industry, which has a $500,000 fund.

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EQUIPMENT PRICES: Sweeping revision of price regulations for machines and parts was ordered by OPA July 1.

Three categories of machines were set up in the order, one, including oil well equipment, well-drilling equipment and oil-refining machinery, with maximum prices those which prevailed October 1, 1941; a second, including expendable tools and miscellaneous equipment, with March 31, 1942, prices as the ceiling; and the third, including drill pipe, casing and tubing, to be governed by the general maximum price regulation or by specific schedules or orders issued by OPA.

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UNIT RIG AND EQUIPMENT CO.

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to 7500 Feet *on* SKF's

The War has brought many tough jobs to SKF Bearings—not only on angry guns, lumbering tanks and barking seadogs, but on the vital shafts of this giant Model U-22 Motorig as well. This rig is used for "slim-hole" rotary drilling to 7500 feet with 33 SKF Bearings of various types absorbing heavy radial and thrust loads year after year and compensating for initial misalignment due to shaft deflections and distortions. SKF's are built to stand the gaff . . . to keep rotating parts always on the job.

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PRACTICAL OPERATING *Hints* FOR

1. MUD CONTROL

Fill-Up Valve Avoids Mud Level Reduction

LOWERING of fluid level when pulling drill pipe from hole may be avoided by installing connection from the standpipe to the casing-head, to permit pumping mud into the hole at intervals as pipe is pulled, keeping the fluid level at or near the surface. High fluid level in the hole maintains the desired weight on the bottom of the hole, reducing tendency of well to blow out caused by materially reducing mud weight, thus the fill-up provides a valuable addition to standard drilling equipment.

A fill-up pipe may be made of joints of 2-inch pipe. A tee on the standpipe, placed a few feet above the derrick floor, is provided for making the connection with the standpipe, and is swaged to the size of the line. The pipe is then directed downward through the floor and is connected to the blow-out preventer or any convenient valve on the casinghead. Near its juncture with the standpipe, a valve is placed above the floor for easy control of flow from floor level.

While drilling, the valve on the fill-up line is automatically kept closed, and all mud passes through the standpipe and rotary hose in the regular channels. When coming out of the hole, however, after several stands of pipe have been removed and the fluid level falls, one member of the drilling crew presses the valve handle and the pumps are started, and sufficient mud is then pumped into the casing to fill the fluid level to the surface.

This mud line connection permits maintenance of fluid level in hole while pulling drill pipe.

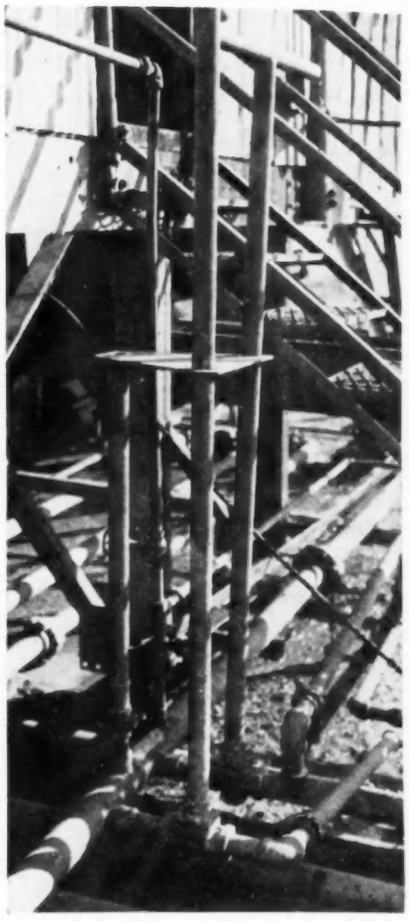
2 CONTROLS

Removable Support For Valve Handles

REPRESENTING an improvement in the common practice of installing extension handles on inaccessible valves around the drilling rig, is the set-up recently devised by a California company. Instead of allowing the unsupported extension handles to lean over and possibly fall off the valve entirely, a vertical pipe support and handle guide is mounted on a pipe line adjacent to the valve controls.

The support consists of a 4-foot length of 2-inch pipe screwed into a 2-inch blind collar welded to the top of a larger pipe lying at or near ground level. Welded to the top of this supporting pipe is a flat triangular sheet of steel plate containing guide holes through which the extension pipe handles can project, keeping the handles always in an erect position.

A quick-acting union placed in the support as close as possible to the welded collar facilitates removable of the assembly when the drilling equipment is being torn out.



A flat steel plate containing guide holes prevent valve extension handles from leaning over or possibly falling off.

THE practical operating hints for the drilling rig, production man and pipeliner, appearing regularly in these pages, are secured from oil operations everywhere and offer suggestions that will help to improve operating efficiency and safety.

The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, The Oil Weekly, Houston."

3. PUMP CARE

Air Cleaner Helpful In Dusty Location

WHERE a power-driven slush pump must be used in dusty terrain, and especially when the set-up is close to a dirt highway, the unit is subjected to a continual bath of grit and air-borne abrasive

THE DRILLING RIG

An air cleaner installed as slush pump breather helps prevent reduction gear wear in dusty locations.

which results in accelerated wear of even the best lubricated bearings.

To protect the reduction gears on one pump so located, the driller removed the usual return bend which — screened or open — provides a breather for the unit and allows equalization of air pressures so as to prevent oil seepage, and in its place set an air cleaner of the bottom intake type. This breather, covered against rain infiltration at the top, draws or exhaust air just above the housing casting, passing it through the oil coated filtering element and thence into or from the interior of the unit.

Such an air cleaner, removed and cleaned in solvent at intervals dictated by conditions, maintains the lubricant within the case at high effectiveness and greatly prolongs the life of the wearing parts of the drive.

4. BOILER OPERATION

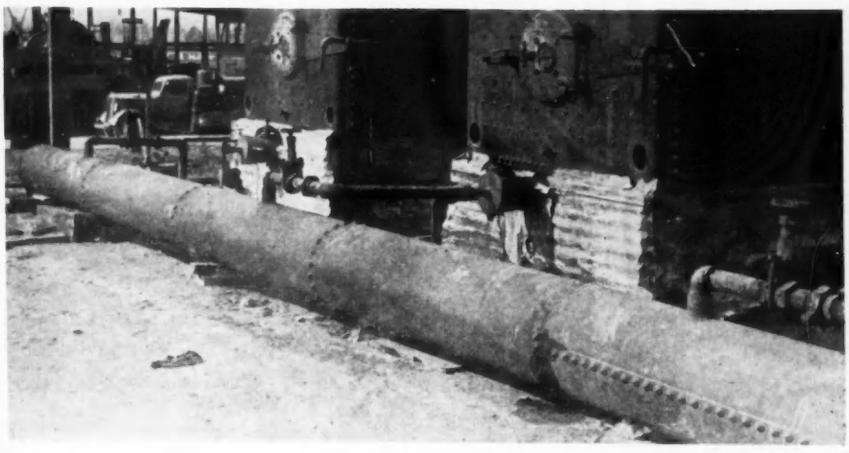
Large Pipe Chamber Smooths Fuel Flow

EQUALIZING and smoothing out the flow of gas to a battery of boilers may be accomplished with a minimum of expense by the use of a length of "big inch" stove pipe or other light pipe as a reservoir, into which the fuel lines of all the boilers may be connected.

All that is necessary is to seal both ends of the pipe and at the proper intervals, weld 2-inch collars for the take-off lines to each burner, and place it along the ground in front of the battery of boilers.

This improvised volume chamber stabilizes the flow of gas in areas where fuel pressure varies considerably. The larger diameter of the pipe insures each boiler, including the last one in the row, receiving its full share of the available volume and pressure.

Work for the fireman is greatly simplified with this type of set-up, as the degree of attention required in setting and controlling each burner is not great, and regardless of the boilers added or taken off the fuel line, fuel flowing to the remaining units will not be changed materially.



Flow of gas to boilers operating in areas where pressures vary considerably, may be inexpensively smoothed out by installation of a storage chamber made of large diameter light weight pipe.

65 Years Building

CHAINS

That length of experience means something. Jeffrey Oil Well Chains continue to represent the highest quality of manufacturing skill and engineering knowledge combined with the latest metallurgical developments.

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Refer to our illustrated section in the COMPOSITE CATALOG

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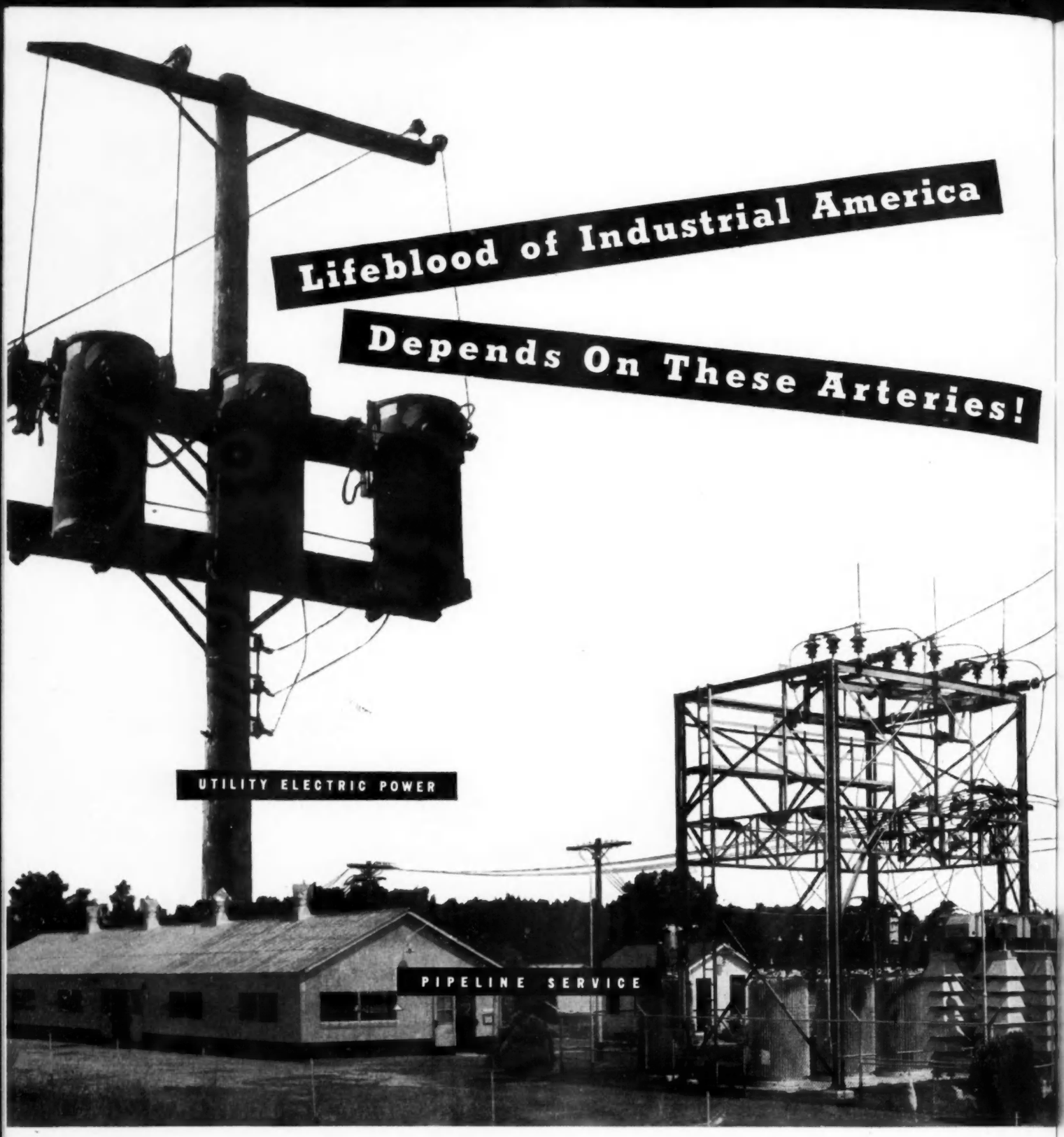

● You've seen charts of the circulatory system of the body, haven't you, showing how the blood circulates through the entire network of arteries and veins? Roughly, that's how your Utility Electric Power supply functions—a great network of arteries and veins supplying vital power for war industry. Similarly, the pipeline industry is a veritable network of arteries, conveying precious oil and gasoline to important sources of supply. Combined, these two industries form the lifeline of industrial and mechanized America. Each is doing everything possible to hasten the victory that is sure to come. Working hand in hand, we'll keep the *power* and the *oil* flowing!

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The Week's News

State Quotas Well in Line With OPC Figures

With the allowable production of Texas set slightly below the OPC recommended level after two months of producing in excess of its quota, United States crude-oil production during July will be at approximately the rate suggested by OPC.

This means that the daily average output of the nation will be in the vicinity of 3,830,000 barrels, or 200,000 barrels more than recommended by OPC for June and 100,000 barrels more than actual production in June.

Flush Areas Close

The 10 flush producing states have a combined state allowable or anticipated production of 3,570,897 barrels, which is only 3397 barrels, or 0.1 percent, more than the OPC recommendation of 3,567,500 barrels. Unprorated Mississippi is expected to account for any production in excess of the OPC level, its recent rate of production being 32,900 barrels greater than the 49,900 barrels OPC recommended for July. Unprorated Illinois offsets the Mississippi excess, probably failing to produce its quota by more than 19,000 barrels.

Below Quotas

Arkansas trimmed its allowable 4585 barrels below the OPC level, and Texas is expected to lack 4918 barrels of producing its quota. Practically all the gain in July's recommended output was given to Texas, OPC estimating demand and transportation facilities as giving the state a quota of 1,214,400 barrels in contrast with 1,068,600 barrels in June. However, actual Texas production must be trimmed to get down to the state allowable of 1,209,482 barrels. This will be accomplished by two more shutdown days than in June, and by closing East Texas for three extra days in contrast with only two extra holidays for the field in June.

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Texas Cycling Plant Meter Order Revised

The Texas Railroad Commission has revised its order controlling the operations of cycling plants. This is the new order issued May 19 which was to have become effective July 1.

The effective date has been extended to August 1, and the commission has eliminated that section of the order requiring the metering of gas injected into each formation. Low pressure meters to handle this gas have become difficult to obtain, the commission was advised.

July Production to be at Level Recommended by OPC

(Barrels daily of crude oil, condensate, and natural gasoline)

STATE	Recommendation of Petroleum Coordinator for June	Recommendation of Petroleum Coordinator for July	State Allowable Beginning of July	Difference July Allowable from Recommendation	Percent Difference July Allowable from Recommendation
Arkansas	75,300	78,500	73,915	— 4,585	— 5.8
California	691,900	739,500	[1]739,500	.....	.....
Kansas	281,900	283,200	283,200	.....	.....
Louisiana	311,300	319,600	319,600	.....	.....
Michigan	63,100	64,800	[2]64,150	— 650	— 1.0
New Mexico	80,600	80,500	80,500	.....	.....
Oklahoma	436,600	433,000	433,000	.....	.....
Texas	1,068,600	1,214,400	[3]1,209,482	— 4,918	— 0.4
Total 8 Prorated States	3,039,300	3,213,500	3,203,347	—10,153	— 0.3
Illinois	320,800	304,100	[4]284,750	—19,350	— 6.4
Mississippi	49,200	49,900	[4]82,800	+32,900	+65.9
Total 10 Flush Production States	3,379,390	3,567,500	3,570,897	+ 3,397	+ 0.1
Other States	257,000	266,300	.....	.....	.....
Total United States	3,636,300	3,833,800	.....	.....	.....

[1] Distributed to fields by Conservation Committee of California Oil Producers.
[2] No state allowable set for July. Estimated production 64,150 barrels daily.
[3] Texas fields will be shut down on July 4, 5, 11, 12, 18, 19, 25, 26, 29, 30, and 31. East Texas will be shut down on these days and also on July 6, 13, and 20.
[4] No state allowable set. Daily average crude oil production for 4 weeks ended June 20.

Nomination "Request" Changed to "Demand"

The Texas Railroad Commission has issued an order requiring nominations. This information has been obtained from purchasers of crude oil in Texas for several years merely by request.

The new order provides that nominations shall be filed on or before the tenth day of each month. The first report is required on July 10. A form was provided which requires the following information from each district separately:

"1. The Railroad Commission District.

"2. The name of the purchasing company and its address.

"3. The name of each field in the district from which the reporting company desires to purchase crude oil, the county in which such field is located and the purchasing company's demand for crude oil from each such field for each calendar day during the next succeeding month and its estimated demand for crude oil from each such field for each calendar day during the next succeeding five months thereafter. Each field shall be reported under the same name and in the same manner as it is carried on the railroad commission schedule of allowables.

"4. In the event the reporting company is not the original gatherer, it shall show the persons or companies from whom the crude oil will be received, the amount to be received from each, and the field in which the oil to be purchased will be produced.

"5. The persons or companies to whom the crude oil is to be delivered and the amount to be delivered to each."

IPAA Committees Named for Annual Meet

Initial arrangements for the annual meeting of Independent Petroleum Association of America, scheduled to be held in Wichita, Kansas, October 20 and 21, were made by C. E. Buchner, executive secretary of the association in conference with Kansas members last week in Wichita. His chief conferees were E. M. Carlson, vice president for Kansas, and E. C. Moriarty, member of the executive committee.

Chairmen were appointed for the committees active during the convention, these being F. G. Stodder, entertainment; J. F. O'Shaugnessy, general reception for delegates; E. W. Pyle, hotel reservations and registration; A. D. Barnett, finance; C. M. Fitzwilliam, transportation; E. Gail Carpenter, exhibits; Mrs. J. A. Aylward, entertainment for ladies, and R. M. Smith and H. M. Gillespie, attendance.

Seaboard Acquires Wellington Oil Company

Sale of Wellington Oil Company of Delaware to Seaboard Oil Corporation of Delaware was concluded June 29 when the latter company acquired 90 percent of the 850,000 outstanding shares of the former. The transaction represents a consideration approximating $3,500,000.

The contract of purchase was dated

June 1 with the transfer of at least 80 percent of the stock required to conclude the transaction. The first block of stock, owned by members of the official staff of Wellington was placed in escrow at $3.00 per share, the remainder being acquired at $3.35. In addition, Seaboard assumed approximately $720,000 of outstanding obligations.

Conclusion of the transaction was announced by R. S. McFarland of Seaboard, who becomes a member of the board of Wellington. Other new board members include Melbert Schwarz, H. B. Lovejoy, and C. G. Benson. John T. O'Neil will continue as president, Guy E. Green as vice president and A. D. Larson as member of the board. Lovejoy becomes the secretary and C. G. Benson treasurer. George M. Luhn, formerly executive vice president of the Wellington, has severed connections due to his induction as captain in the Air Corps.

Seaboard, by virtue of the deal, assumes ownership in leases totaling about 440,000 acres, royalty under several hundred wells and actual operating ownership in more than 100 producers in South Texas.

Protest Lease Expiration Plan in Alberta

More than 1000 signatures have been obtained to a petition protesting a regulation by the Alberta provincial department of lands and mines that holders of oil leases in the province must start

It was impossible to carry out the government regulation, Roberts said, because drilling equipment was not available.

Dominican Republic Law To Encourage Drilling

A liberal petroleum law has been passed by the government of the Dominican Republic in an effort to encourage the entry of foreign capital. Although several shallow small producers were drilled in the country in recent years, there is no commercial production. Dominican Seaboard Oil Company, however, has conducted considerable exploration in the country the last year and plans a drilling program to begin this summer.

Under the regulations a concession for exploration and exploitation allows a three-year exploratory period. A maximum area of 24,711 acres may be solicited. A small initial acreage tax is charged. At the end of the exploratory period the concessionaire has 6 months in which he may select up to half the solicited acreage, in tracts not exceeding 1235 acres, for exploitation over 40 years. A tax of 50 centavos is paid for the certificate approving each tract, an initial exploitation tax of 10 centavos per hectare (2.47 acres) selected, and 5 centavos per hectare yearly for 3 years. Thereafter the annual rate rises to 10 centavos for the next 27 years and to 15 centavos for the final 10 years.

An important provision in the law frees a concessionaire from obligation to pay export taxes on oil that may be sent out of the country or to pay import taxes on machinery, implements and other equipment used in working a concession. Furthermore, he is protected from paying taxes to municipal governments.

Provision is made for grants of initial exploitation concessions and concessions for tracts lying under water. If oil is discovered, the government receives, in addition to payments previously outlined, a 7 percent royalty of the oil's value during the first 2 years, 9 percent during the next 5 years and 10 percent for the remaining 33 years of the concession. The government shall receive a minimum of 40 centavos per ton of oil, and may receive royalties in oil rather than cash. The concessionaire may freely dispose of his oil, refine and transport it.

Government ownership of the subsoil is established in the law but the provisions do not affect concessions granted prior to enactment of the new legislation. However, concession holders may elect to have their contracts brought within the terms of the new enactment.

Russians Increase Recovery And Refining Efficiency

By installation of catalytic cracking units the Soviet government has been enabled to utilize successfully large quantities of low-gravity crudes in the manufacture of high-octane aviation gasoline, thus freeing the Soviet refining industry from dependence on selected high-gravity crudes. The Foreign Commerce Weekly, quoting Soviet officials, says aviation gasoline is being produced in refineries at Baku and Grozny from crude of low grade.

Russia is increasing its output of crude by various means including new prospecting methods, improved drilling methods and higher output from old fields. Wider use is being made of geophysical exploration methods. Rotary drilling is being more widely used. Hole diameters are being reduced, portable rigs are being employed. In an effort to save steel, wooden plunger lifts are in use and wells in the eastern fields are being drilled without casing, though it is admitted such innovations are of an emergency nature.

Crude production in the Ural-Volga region has been increased over 11 percent relative to 1940 production, this increase being shared by fields in the districts of Buguruslan, Emba, Kama and Syzran.

Increased production of lubricants, diesel oil and heavy fuel oil is reported.

Hugoton to West Missouri Gas System Is Proposed

Union Gas System, Inc., has submitted plans to OPC and WPB for construction of a new 300-mile gas system from the Hugoton field across Kansas into western Missouri. The line, according to Paul R. Johnson, president, would "transfer its supplies to all existing main pipe line systems for distribution to industrial and civilian consumers in Kansas and western Missouri."

Johnson points out that a much greater supply of gas must be provided the region to insure successful performance of war plant production schedules. At present requirements are said to be in excess of pipe-line capacity for the region of western Missouri and Kansas east of Wichita and Topeka, but including these cities. The Hugoton field, Johnson declares, has "at least 1½ million acres of proved gas-bearing lands, of which only about ¼ million acres are developed."

OPC recently reduced gas well spacing regulations in the area and adjoining northeast Oklahoma because of the supply situation.

An active campaign for old stuffing box rubber rings in the Powell-Mexia area of Texas is serving the double purpose of adding to the scrap rubber collection and removing fire hazards. The 2080-pound pile of old stuffing box rubber rings shown in the photograph was collected from 50 wells belonging to Girard Corporation. The company furnished men to shut the wells down and take up a couple of derrick floor boards, and help the boys pick up the rings that had been tossed beneath the flooring over a period of years. The boys, sons of employes of Girard Corporation, accompanied by their vocational teacher, hauled the rubbers away, cleaned up under the derrick floor and around the outside, as well as cleaning oil and dirt from the salvaged material.

Many operators in the Powell-Mexia area are averaging from 75 to in excess of 100 pounds of old stuffing box rubber rings per well. No doubt other old pumping fields could do equally well. The usual collection per well fills an ordinary tub, which makes an ideal transportation medium. Although oily, this rubber is exceptionally well preserved.

Markets • Statistics • Prices

Markets Continue Strong; Eastern Prices Increased

Continued and growing scarcity of products and price increases in the East authorized by Price Administrator Leon Henderson kept markets strong during the week, with increases of an eighth in Oklahoma and Mid-Western gasoline quotations. The Eastern increases, designed to make up losses from high transportation costs, apply only to gasoline, kerosine and fuel oils going into hands of individual consumers, and do not apply to heavy fuel oils, on the theory that higher costs imposed upon industrial consumers would spiral manufacturers' costs in an inflationary manner. Some method whereby the government will absorb the added transportation costs on heavy fuel is yet to be worked out.

Gasoline and Light Fuels

OPA's price increases boosted all grades of gasoline 2.5 cents per gallon, and Nos. 1, 2, 3 and 4 fuel oils, including kerosine, range oil, tractor fuel, distillate fuel oils and gas house oils, 2 cents per gallon. (Details of prices will be found tabulated on page 48.)

In connection with the increase, effective June 29, and applying to the 17 states of District 1, along the Atlantic Coast, Henderson issued this statement:

"The Office of Price Administration is keenly aware of the inequity of making consumers of petroleum bear the entire cost of the submarine warfare against tanker movement' along the Eastern Coast. It is my own feeling, and one which I am sure is widely shared, that the higher cost of getting petroleum to the East Coast resulting from enemy action is an appropriate charge against the public treasury, just as is the cost of patrol boats with which we sink the submarines.

Effect on Industries

"Moreover, price increases of this sort have a bad dislocating effect on the whole cost situation of industries operating under our ceilings. Water-borne fuel oil, for example, delivered at tanker rates is an economical fuel for most industries. Should it have to carry, even temporarily, land transportation rates, this would have a serious effect on prices charged by the industries which use heavy fuel oil. The fact that these increased fuel costs are temporary makes it especially desirable that the government absorb the higher costs rather than have them translated irrevocably into higher prices all along the line.

"In the present situation, we have corrected this to the best of our ability by loading the increased cost on to gasoline and light fuel oils where it will not be pyramided. Admittedly, however, this is not a satisfactory solution. I hope a permanent solution will be forthcoming for this and similar problems in the future."

Gasoline demand was reported very good in Oklahoma and some refiners had advanced their prices an eighth, as the product was scarce. In Kansas gasoline shipment was reported ahead of last year, demand for other products being strong and supplies closely held.

Gulf Coast refined markets continued quiet with shipments confined to contracts, and these restricted by the shipping situation.

Pennsylvania markets were unsettled following the government-allowed increase in that district, some refiners quoting in line with the advance while others hesitated.

Atlantic Using New Line In Shipments to East

Mixed grades of New Mexico and West Texas sour crudes will be shipped at rate of 6000 to 7000 barrels daily by Atlantic Pipe Line Company from its rack near Neale field, Beauregard Parish, Louisiana, in train-load lots to The Atlantic Refining Company's refinery at Philadelphia. The company began operating early last week a 63-mile 8-inch line that was built to deliver Neale crude into its Texas system near Beaumont. Completion of the Texas portion of the line was delayed several months by flood waters in the swamp region, and in the meantime arrangements were made to divert 3000 barrels of Neale crude daily by tank cars to the Philadelphia plant. These shipments will be continued along with the Permian Basin oil movement.

Atlantic is one of the largest shippers of crude by tank cars from the Southwest to the East. The company is moving about 20,000 barrels daily of its East Texas field runs to rack near Rodessa, where an additional 5000 barrels daily is added to its rail shipments to Pittsburgh, thence through Keystone Pipe Line Company's reversed gasoline line to Philadelphia.

Stocks Continue Decline; Fuel Situation Not Helped

The industry continued to improve its gasoline stock position, statistics for the week ended June 27 revealing another large reduction in inventories of this product. However, the acute fuel-oil situation became more critical as heavy fuel stocks were reduced further by a substantial quantity and only a small volume was added to gas oil and distillate stocks.

Gasoline stocks dropped 1,236,000 barrels and on June 27 stood at 88,611,000 barrels, which was 1,803,000 barrels or 1.9 percent less than a year ago. Thus, despite all the fear of surplus gasoline inventories as a result of rationing and tire conservation efforts and the record volume on hand in March and April, refiners apparently had adjusted crude runs and yields sufficiently to overcome the problem. As a result gasoline stocks are now approaching the lowest level attained in 1941, which was 80,870,000 in early October.

However, the desired reduction in gasoline stocks apparently was being achieved to a considerable degree through lower crude runs to stills for fuel oil inventories were not being built up in accordance with normal seasonal trends and increased demands. The week ended June 27, saw a reduction of 1,014,000 barrels in heavy fuel oil stocks, which brought them to 77,304,000 barrels. This was the lowest level in many years, being 13,992,000 barrels, or 15.3 percent under a year ago.

The position of gas oil and distillate stocks was improved somewhat, when 607 000 barrels were added to raise them to 32,851,000 barrels. However, this was in contrast with 37,832,000 barrels of

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Crude Oil Prod. Week Ended	Runs to Stills Bbls. Day (Add 000)	Runs to Stills Week Ended	Crude Stocks Bbls. (Add 000)	Crude Stocks Week Ended	Gasoline Stocks Bbls. (Add 000)	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8– 5	3,650	10–21	278,607	5–26	87,769	4–22	39,562	10–28	116,237	8–26
1940	3,890	3–16	3,690	6–22	265,865	8–31	102,817	4–20	49,051	10–19	109,135	9–14
1941	4,337	11–22	[1]4,120	10–18	266,187	3–29	99,727	3–29	[5]54,983	11–[5]	102,448	1– 4
1942	[1]4,337	2– 7	3,961	1– 3	263,208	3–28	[1]107,229	3–14	49,357	1– 3	95,857	1– 3
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–21	71,152	10– 7	20,722	4–15	105,397	4– 8
1940	3,335	11–30	3,370	1– 6	237,339	1–27	79,847	11– 9	23,551	4– 6	102,344	2–10
1941	3,364	1–11	3,490	1–18	240,399	11–15	80,870	10–4	28,381	4–12	92,635	7– 5
1942	3,418	5– 2	3,393	5–23	244,364	1–10	88,611	6–27	29,240	4–25	77,304	6–27
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 6	3,602	.....	3,451	.....	254,316	.....	93,305	.....	31,535	.....	79,556	.....
June 13	3,700	.....	3,478	.....	253,386	.....	91,994	.....	31,276	.....	78,759	.....
June 20	3,721	.....	3,434	.....	252,748	.....	89,847	.....	32,244	.....	78,318	.....
June 27, 1942	**3,719**	.....	**3,581**	.....	.....	.....	**88,611**	.....	**32,851**	.....	**77,304**	.....
June 28, 1941	3,847	.....	3,949	.....	[4]259,142	.....	90,414	.....	37,832	.....	91,296	.....
Change:												
In week	—2	.....	+147	.....	—638	.....	—1,236	.....	+607	.....	—1,014	.....
In year	—128	.....	—368	.....	—6,394	.....	—1,803	.....	—4,981	.....	—13,992	.....
In year	—3.3%	.....	—9.3%	.....	—2.5%	.....	—1.9%	.....	—13.1%	.....	—15.3%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Stocks, Jun- 1, 1941.

June 1 with the transfer of at least 80 percent of the stock required to conclude the transaction. The first block of stock, owned by members of the official staff of Wellington was placed in escrow at $3.00 per share, the remainder being acquired at $3.35. In addition, Seaboard assumed approximately $720,000 of outstanding obligations.

Conclusion of the transaction was announced by R. S. McFarland of Seaboard, who becomes a member of the board of Wellington. Other new board members include Melbert Schwarz, H. B. Lovejoy, and C. G. Benson. John T. O'Neil will continue as president, Guy E. Green as vice president and A. D. Larson as member of the board. Lovejoy becomes the secretary and C. G. Benson treasurer. George M. Luhn, formerly executive vice president of the Wellington, has severed connections due to his induction as captain in the Air Corps.

Seaboard, by virtue of the deal, assumes ownership in leases totaling about 440,000 acres, royalty under several hundred wells and actual operating ownership in more than 100 producers in South Texas.

Protest Lease Expiration Plan in Alberta

More than 1000 signatures have been obtained to a petition protesting a regulation by the Alberta provincial department of lands and mines that holders of oil leases in the province must start

It was impossible to carry out the government regulation, Roberts said, because drilling equipment was not available.

Dominican Republic Law To Encourage Drilling

A liberal petroleum law has been passed by the government of the Dominican Republic in an effort to encourage the entry of foreign capital. Although several shallow small producers were drilled in the country in recent years, there is no commercial production. Dominican Seaboard Oil Company, however, has conducted considerable exploration in the country the last year and plans a drilling program to begin this summer.

Under the regulations a concession for exploration and exploitation allows a three-year exploratory period. A maximum area of 24,711 acres may be solicited. A small initial acreage tax is charged. At the end of the exploratory period the concessionaire has 6 months in which he may select up to half the solicited acreage, in tracts not exceeding 1235 acres, for exploitation over 40 years. A tax of 50 centavos is paid for the certificate approving each tract, an initial exploitation tax of 10 centavos per hectare (2.47 acres) selected, and 5 centavos per hectare yearly for 3 years. Thereafter the annual rate rises to 10 centavos for the next 27 years and to 15 centavos for the final 10 years.

An important provision in the law frees a concessionaire from obligation to pay export taxes on oil that may be sent out of the country or to pay import taxes on machinery, implements and other equipment used in working a concession. Furthermore, he is protected from paying taxes to municipal governments.

Provision is made for grants of initial exploitation concessions and concessions for tracts lying under water. If oil is discovered, the government receives, in addition to payments previously outlined, a 7 percent royalty of the oil's value during the first 2 years, 9 percent during the next 5 years and 10 percent for the remaining 33 years of the concession. The government shall receive a minimum of 40 centavos per ton of oil, and may receive royalties in oil rather than cash. The concessionaire may freely dispose of his oil, refine and transport it.

Government ownership of the subsoil is established in the law but the provisions do not affect concessions granted prior to enactment of the new legislation. However, concession holders may elect to have their contracts brought within the terms of the new enactment.

Russians Increase Recovery And Refining Efficiency

By installation of catalytic cracking units the Soviet government has been enabled to utilize successfully large quantities of low-gravity crudes in the manufacture of high-octane aviation gasoline, thus freeing the Soviet refining industry from dependence on selected high-gravity crudes. The Foreign Commerce Weekly, quoting Soviet officials, says aviation gasoline is being produced in refineries at Baku and Grozny from crude of low grade.

Russia is increasing its output of crude by various means including new prospecting methods, improved drilling methods and higher output from old fields. Wider use is being made of geophysical exploration methods. Rotary drilling is being more widely used. Hole diameters are being reduced, portable rigs are being employed. In an effort to save steel, wooden plunger lifts are in use and wells in the eastern fields are being drilled without casing, though it is admitted such innovations are of an emergency nature.

Crude production in the Ural-Volga region has been increased over 11 percent relative to 1940 production, this increase being shared by fields in the districts of Buguruslan, Emba, Kama and Syzran.

Increased production of lubricants, diesel oil and heavy fuel oil is reported.

Hugoton to West Missouri Gas System Is Proposed

Union Gas System, Inc., has submitted plans to OPC and WPB for construction of a new 300-mile gas system from the Hugoton field across Kansas into western Missouri. The line, according to Paul R. Johnson, president, would "transfer its supplies to all existing main pipe line systems for distribution to industrial and civilian consumers in Kansas and western Missouri."

Johnson points out that a much greater supply of gas must be provided the region to insure successful performance of war plant production schedules. At present requirements are said to be in excess of pipe-line capacity for the region of western Missouri and Kansas east of Wichita and Topeka, but including these cities. The Hugoton field, Johnson declares, has "at least 1½ million acres of proved gas-bearing lands, of which only about ¼ million acres are developed."

OPC recently reduced gas well spacing regulations in the area and adjoining northeast Oklahoma because of the supply situation.

An active campaign for old stuffing box rubber rings in the Powell-Mexia area of Texas is serving the double purpose of adding to the scrap rubber collection and removing fire hazards. The 2080-pound pile of old stuffing box rubber rings shown in the photograph was collected from 50 wells belonging to Girard Corporation. The company furnished men to shut the wells down and take up a couple of derrick floor boards, and help the boys pick up the rings that had been tossed beneath the flooring over a period of years. The boys, sons of employes of Girard Corporation, accompanied by their vocational teacher, hauled the rubbers away, cleaned up under the derrick floor and around the outside, as well as cleaning oil and dirt from the salvaged material.

Many operators in the Powell-Mexia area are averaging from 75 to in excess of 100 pounds of old stuffing box rubber rings per well. No doubt other old pumping fields could do equally well. The usual collection per well fills an ordinary tub, which makes an ideal transportation medium. Although oily, this rubber is exceptionally well preserved.

Markets • Statistics • Prices

Markets Continue Strong; Eastern Prices Increased

Continued and growing scarcity of products and price increases in the East authorized by Price Administrator Leon Henderson kept markets strong during the week, with increases of an eighth in Oklahoma and Mid-Western gasoline quotations. The Eastern increases, designed to make up losses from high transportation costs, apply only to gasoline, kerosine and fuel oils going into hands of individual consumers, and do not apply to heavy fuel oils, on the theory that higher costs imposed upon industrial consumers would spiral manufacturers' costs in an inflationary manner. Some method whereby the government will absorb the added transportation costs on heavy fuel is yet to be worked out.

Gasoline and Light Fuels

OPA's price increases boosted all grades of gasoline 2.5 cents per gallon, and Nos. 1, 2, 3 and 4 fuel oils, including kerosine, range oil, tractor fuel, distillate fuel oils and gas house oils, 2 cents per gallon. (Details of prices will be found tabulated on page 48.)

In connection with the increase, effective June 29, and applying to the 17 states of District 1, along the Atlantic Coast, Henderson issued this statement:

"The Office of Price Administration is keenly aware of the inequity of making consumers of petroleum bear the entire cost of the submarine warfare against tanker movement' along the Eastern Coast. It is my own feeling, and one which I am sure is widely shared, that the higher cost of getting petroleum to the East Coast resulting from enemy action is an appropriate charge against the public treasury, just as is the cost of patrol boats with which we sink the submarines.

Effect on Industries

"Moreover, price increases of this sort have a bad dislocating effect on the whole cost situation of industries operating under our ceilings. Water-borne fuel oil, for example, delivered at tanker rates is an economical fuel for most industries. Should it have to carry, even temporarily, land transportation rates, this would have a serious effect on prices charged by the industries which use heavy fuel oil. The fact that these increased fuel costs are temporary makes it especially desirable that the government absorb the higher costs rather than have them translated irrevocably into higher prices all along the line.

"In the present situation, we have corrected this to the best of our ability by loading the increased cost on to gasoline and light fuel oils where it will not be pyramided. Admittedly, however, this is not a satisfactory solution. I hope a permanent solution will be forthcoming for this and similar problems in the future."

Gasoline demand was reported very good in Oklahoma and some refiners had advanced their prices an eighth, as the product was scarce. In Kansas gasoline shipment was reported ahead of last year, demand for other products being strong and supplies closely held.

Gulf Coast refined markets continued quiet with shipments confined to contracts, and these restricted by the shipping situation.

Pennsylvania markets were unsettled following the government-allowed increase in that district, some refiners quoting in line with the advance while others hesitated.

Atlantic Using New Line In Shipments to East

Mixed grades of New Mexico and West Texas sour crudes will be shipped at rate of 6000 to 7000 barrels daily by Atlantic Pipe Line Company from its rack near Neale field, Beauregard Parish, Louisiana, in train-load lots to The Atlantic Refining Company's refinery at Philadelphia. The company began operating early last week a 63-mile 8-inch line that was built to deliver Neale crude into its Texas system near Beaumont. Completion of the Texas portion of the line was delayed several months by flood waters in the swamp region, and in the meantime arrangements were made to divert 3000 barrels of Neale crude daily by tank cars to the Philadelphia plant. These shipments will be continued along with the Permian Basin oil movement.

Atlantic is one of the largest shippers of crude by tank cars from the Southwest to the East. The company is moving about 20,000 barrels daily of its East Texas field runs to rack near Rodessa, where an additional 5000 barrels daily is added to its rail shipments to Pittsburgh, thence through Keystone Pipe Line Company's reversed gasoline line to Philadelphia.

Stocks Continue Decline; Fuel Situation Not Helped

The industry continued to improve its gasoline stock position, statistics for the week ended June 27 revealing another large reduction in inventories of this product. However, the acute fuel-oil situation became more critical as heavy fuel stocks were reduced further by a substantial quantity and only a small volume was added to gas oil and distillate stocks.

Gasoline stocks dropped 1,236,000 barrels and on June 27 stood at 88,611,000 barrels, which was 1,803,000 barrels or 1.9 percent less than a year ago. Thus, despite all the fear of surplus gasoline inventories as a result of rationing and tire conservation efforts and the record volume on hand in March and April, refiners apparently had adjusted crude runs and yields sufficiently to overcome the problem. As a result gasoline stocks are now approaching the lowest level attained in 1941, which was 80,870,000 in early October.

However, the desired reduction in gasoline stocks apparently was being achieved to a considerable degree through lower crude runs to stills for fuel oil inventories were not being built up in accordance with normal seasonal trends and increased demands. The week ended June 27, saw a reduction of 1,014,000 barrels in heavy fuel oil stocks, which brought them to 77,304,000 barrels. This was the lowest level in many years, being 13,992,000 barrels, or 15.3 percent under a year ago.

The position of gas oil and distillate stocks was improved somewhat, when 607 000 barrels were added to raise them to 32,851,000 barrels. However, this was in contrast with 37,832,000 barrels of

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Crude Oil Prod. Week Ended	Runs to Stills Bbls. Day (Add 000)	Runs to Stills Week Ended	Crude Stocks Bbls. (Add 000)	Crude Stocks Week Ended	Gasoline Stocks Bbls. (Add 000)	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8– 5	3,650	10–21	278,607	5–26	87,769	4–22	39,562	10–28	116,237	8–26
1940	3,890	3–16	3,690	6–22	265,865	8–31	102,817	4–20	49,051	10–19	109,135	9–14
1941	4,337	11–22	[1]4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	[1]4,337	2– 7	3,961	1– 3	263,208	3–28	[1]107,229	3–14	49,357	1– 3	95,857	1– 3
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–21	71,152	10– 7	20,722	4–15	105,397	4– 8
1940	3,335	11–30	3,370	1– 6	237,339	1–27	79,847	11– 9	23,551	4– 6	102,344	2–10
1941	3,364	1–11	3,490	1–18	240,399	11–15	80,870	10–4	28,381	4–12	92,635	7– 5
1942	3,418	5– 2	3,393	5–23	244,364	1–10	88,611	6–27	29,240	4–25	77,304	6–27
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 6	3,602	.....	3,451	.....	254,316	.....	93,305	.....	31,535	.....	79,556	.....
June 13	3,700	.....	3,478	.....	253,386	.....	91,994	.....	31,276	.....	78,759	.....
June 20	3,721	.....	3,434	.....	252,748	.....	89,847	.....	32,244	.....	78,318	.....
June 27, 1942	**3,719**	.....	**3,581**	.....	.....	.....	**88,611**	.....	**32,851**	.....	**77,304**	.....
June 28, 1941	3,847	.....	3,949	.....	[4]259,142	.....	90,414	.....	37,832	.....	91,296	.....
Change:												
In week	—2	.....	+147	.....	—638	.....	—1,236	.....	+607	.....	—1,014	.....
In year	—128	.....	—368	.....	—6,394	.....	—1,803	.....	—4,981	.....	—13,992	.....
In year	—3.3%	.....	—9.3%	.....	—2.5%	.....	—1.9%	.....	—13.1%	.....	—15.3%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Stocks, Jun- 1, 1941.

these light fuel oils in storage a year ago, representing a reduction of 13.1 percent.

Large drafts on gasoline and heavy-fuel-oil stocks took place during the week, although crude runs to stills were 147,000 barrels per day larger than a week previous. An average of 3,581,000 barrels of crude was run to stills each day last week, compared with 3,434,000 barrels in the preceding week. In contrast with a year ago, these runs to stills were 368,000 barrels lower, or 9.3 percent.

The downward trend in crude stocks continued, statistics for the week ended June 20, latest available information, showing 252,748,000 barrels in storage. This represented a reduction of 638,000 barrels during the week, and 6,394,000 barrels for the year.

U. S. Crude Production Down 423,000 Barrels

United States crude oil production during the week ended July 4 averaged 3,315,175 barrels daily, in contrast with a recovery of 3,738,205 barrels per day during the preceding week.

The decline was due primarily to the decreased output of Texas, which was 924,000 barrels against 1,325,130 barrels the preceding week. Practically all areas in Texas registered materially less output, as most wells in the state produced only three days during the 7-day period. The shutdowns were required by the Railroad Commission.

California also showed a decline, producing but 622,600 barrels as compared with 640,800 barrels the previous week. OPC had recommended an output of 739,500 barrels daily for California during July.

Only comparatively minor changes were shown in the production rates of other states.

OPA Fixes Price For Louisiana Field

A maximum price of $1.48 per barrel at the well for crude of 40° gravity and above, produced at University Field, Louisiana, was established by OPA July 2.

It was explained that this price already is being paid for more than 75 percent of the oil produced in the field and the buyer of the remaining product had notified OPA of its willingness to pay that price and absorb an increase of 2 cents a barrel above the price it was previously paying.

Most of the production is taken by Sun Oil Company, with Standard Oil Company of Louisiana taking the remainder. The former was paying $1.48 per barrel for 40° oil on October 1, last, the base date for the setting of oil prices, and the latter was paying 2 cents less.

Gulf Coast Refiners Oppose Subsidy Bill

Gulf Coast Refiners Association, composed of 14 independent petroleum refiners operating in the Gulf Coast of Texas and Louisiana, has gone on record as strongly opposed to Senate Bill S-2562, which would create a $500,000,000 War Petroleum Corporation.

A resolution adopted by the membership stated government ownership and operation of refineries and other phases of the oil business was unnecessary. The resolution pointed out that refineries are producing more products than can be transported by crippled facilities, and therefore should not be criticized for reducing runs to stills. The only authority the federal government needs to insure efficient refinery operations and adequate supplies of petroleum products is "authority to compensate refiners for increased costs due to changes in operations, including transportation," the resolution concluded.

Carbon Black Output At Peak in 1941

Carbon black production in 1941 totaled 594,065,000 pounds, an all-time peak and an increase of 4 percent over the previous record output in 1940. Natural gas burned in last year's record production amounted to 365,377,000,000 cubic feet. Because of an increased production of furnace blacks, which have a relatively high yield, the average yield of black in 1941 was 1.63 pounds per 1000 feet of gas as compared with 1.54 pounds in 1940.

Petroleum Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	[1]OPC Allocation in July	PRODUCTION IN WEEK ENDED June 27	July 4
Arkansas	78,500	73,850	73,750
California	739,500	640,800	622,600
Long Beach		36,000	36,400
Midway-Sunset		53,700	53,200
Kettleman Hills		35,700	33,100
Wilmington		90,200	90,300
Rest of State		425,200	409,600
Colorado	7,700	7,050	6,700
Illinois	304,100	276,850	277,150
Salem		42,250	41,750
Louden		50,350	48,350
Other New Pools		171,950	171,800
Old Pools		12,300	15,250
Indiana	22,000	20,450	18,700
Kansas	283,200	272,100	269,300
Kentucky	14,100	12,550	9,750
Louisiana	319,600	308,900	309,250
North Louisiana		88,500	90,800
South Louisiana		220,400	218,450
Michigan	64,800	65,100	65,600
Mississippi	49,900	83,350	83,400
Missouri		130	130
Montana	23,100	23,150	23,250
Nebraska	4,100	3,900	3,700
New Mexico	80,500	76,650	76,650
New York	15,300	13,400	13,350
Ohio	11,300	9,900	9,800
Oklahoma	433,000	369,300	373,700
Oklahoma City		69,800	72,850
Seminole Area		92,300	94,000
Rest of State		207,200	206,850
Pennsylvania	54,100	52,400	52,550
Tennessee		30	30
Texas	[2]1,214,400	1,325,130	924,000
Upper Gulf Coast		281,230	172,150
East Texas Field		295,400	217,700
Rest of Eastern Texas		93,900	74,150
Lower Gulf Coast		97,950	53,650
Southwest Texas		49,950	29,550
South Central Texas		15,600	15,500
West Texas		235,000	138,800
North Texas		149,250	142,750
Panhandle		106,850	79,750
Utah		15	15
West Virginia	17,800	9,700	9,550
Wyoming	96,800	93,500	92,250
Total United States	3,833,800	3,738,205	3,315,175

[1] Production rates recommended for states by Office of Petroleum Coordinator, on basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month. State conservation authorities except Texas Railroad Commission have prescribed allowables calculated to hold actual production within OPC regulations. (Details on state allowables published in this week's issue of The Oil Weekly.)

[2] Actual production of crude oil and other petroleum liquids in Texas expected to average 1,209,482 barrels daily, under railroad commission order, taking into consideration shutdowns in most fields of July 4, 5, 11, 12, 18, 19, 25, 26, 29, 30, and 31. East Texas fields will be shut down on these days and also on July 6, 13, and 20.

Pipe Arriving for West Texas Gasoline Line

Delivery of pipe for Phillips Petroleum Company's natural gasoline carrier that will connect controlled and affiliated plants in West Texas and Lea County, New Mexico, with its refinery at Borger, Texas, has been underway for several weeks. The system will involve 240 miles of 8-inch from Borger to the Goldsmith district. Ector County, with 60 miles of lateral line to Hobbs and other important natural gasoline sources in Lea County.

O. E. Dempsey Construction Company has contract for laying the line, but work in the grain belt will be delayed several weeks to permit harvesting work to be completed. Right-of-way purchase has been underway since the line was authorized last February, and telephone-telegraph lines are nearing completion.

Standard of California Workers Big Bond Buyers

Standard Oil Company of California reports that over 98 percent of its employes have pledged themselves to invest 10 per cent or more of their income in United States War Bonds. Employes committees conducted a two-weeks "sign-up" campaign with the result that the percentage of bond-buyers in the company is probably the highest for any of the larger units in this area.

The company's bond campaign was opened by a radio address by H. D. Collier, president, and at the conclusion of the campaign Minute Man flags were awarded plants and offices for their effort. Over 2000 of the company's men are now serving in the armed forces.

Saskatchewan Test Projected to 9000 Feet

The most scientific search for oil and gas ever conducted in Saskatchewan has now reached its final stage in drilling operations which have been proceeding near the town of Radville, 80 miles south of Regina. The drill has reached 4203 feet. Drilling is by Norcanols Oil & Gas Company, backed by Imperial Oil.

The Saskatchewan investigation started two years ago over an area of 1800 square miles. A complete geophysical survey was made. During the past month or more, drilling equipment, obtained from the United States, was assembled and the company is prepared to drill to 9000 feet.

Also operating in the southeastern part of the province, are the Bobjo interests of Robert Jowsey, Toronto. Bobjo in 1941 conducted a geophysical survey in the extreme southeast corner. Early in June, Bobjo interests are expected to commence drilling operations.

Franco Oils intend to drill three wells this summer in the northwestern part of the province in the Big Muddy and Vera areas south of Lloydminster. Franco holds a 20-year gas franchise to supply Saskatoon.

Other areas where exploratory drilling will take place this year are in the area south of Maple Creek in the southwest part of the province, at Horsham, north of Maple Creek.

Other drilling operations are planned for the Kamsack field in the northeast where gas is already being piped into the town.

Gravity-Scale Crude Oil Prices in Mid-Continent Fields

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas: Stanolind, Gulf, Texas, Skelly, Barnsdall, Tidewater, Sinclair, Phillips	Oklahoma-Kansas: Carter, Magnolia, Shell	North Louisiana-Arkansas: [1]Rodessa, etc.	North Louisiana-Arkansas: [2]Champagnolle, etc.	North Louisiana-Arkansas: Bunkie, Eola, Olla, (by Standard)	North Louisiana-Arkansas: Lisbon, La (by Gulf)	North Louisiana-Arkansas: [3]Atlanta, Buckner, etc., Ark.	Inland Texas and New Mexico: North and West Central Texas	Inland Texas and New Mexico: [4]Eastern Texas	Inland Texas and New Mexico: West Texas, [17]Panhandle, New Mexico	South Texas: [5]Refugio Type	South Texas: [6]Mirando Type	Texas Gulf Coast: [7]Gulf Coast	Texas Gulf Coast: [8]Anahuac Type	Texas Gulf Coast: [9]Dickinson Type	Louisiana Gulf Coast: [10]Gulf Coast	Louisiana Gulf Coast: [11]Standard of La.	Louisiana Gulf Coast: [12]Texas Co.	Louisiana Gulf Coast: [13]Texas Co.	Louisiana Gulf Coast: [14]Magnolia Pet. Co.	Louisiana Gulf Coast: [15]Shell Oil Co.	Louisiana Gulf Coast: Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.)
17–17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18–18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19–19.9	....	....	....	....	....	....	....	....	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20–20.9	$0.85	$0.75	....	....	....	....	$0.68	$0.81	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21–21.9	.87	.78	....	....	....	....	.70	.83	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22–22.9	.89	.81	....	....	....	....	.72	.85	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23–23.9	.91	.84	....	....	....	....	.74	.87	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24–24.9	.93	.87	$0.88	$0.86	$0.98	....	.76	.89	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25–25.9	.95	.90	.90	.88	1.00	....	.78	.91	.97 / .92	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26–26.9	.97	.93	.92	.90	1.02	....	.80	.93	.99	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27–27.9	.99	.96	.94	.92	1.04	$0.81	.82	.95	1.01	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28–28.9	1.01	.99	.96	.94	1.06	.83	.84	.97	1.03	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29–29.9	1.03	1.02	.98	.96	1.08	.85	.86	.99	1.05	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30–30.9	1.05	1.05	1.00	.98	1.10	.87	.88	1.01	1.07	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31–31.9	1.07	1.07	1.02	1.00	1.12	.89	.90	1.03	1.09	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32–32.9	1.09	1.09	1.04	1.02	1.14	.91	.92	1.05	1.11	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33–33.9	1.11	1.11	1.06	1.04	1.16	.93	.94	1.07	1.13	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34–34.9	1.13	1.13	1.08	1.06	1.18	.95	.96	1.09	1.15	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35–35.9	1.15	1.15	1.10	1.08	1.20	.97	.98	1.11	1.17	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36–36.9	1.17	1.17	1.12	1.10	1.22	....	1.00	1.13	1.19	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37–37.9	1.19	1.19	1.14	1.12	1.24	....	1.02	1.15	1.21	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
38–38.9	1.21	1.21	1.16	1.14	1.26	....	1.04	1.17	1.23	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.26	....	1.21	....	....	1.21	1.16
39–39.9	1.23	1.23	1.18	1.16	1.28	....	1.06	1.19	1.25	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 & Up	1.25	1.25	1.20	1.18	1.30	....	1.08	1.21	1.27	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Arlola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry, Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timballier Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Wertz.

[17] Add 3 cents for Panhandle prices.

MID-CONTINENT FLAT PRICES

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Creek, Dorcheat, McKamie	$1.15	5–22–41
Smackover, Heavy	.83	5–22–41
Louisiana, North:		
Cotton Valley Distillate	1.30	5–22–41
Cotton Valley (Holloway sn.)	1.25	5–22–41
Lisbon Distillate	1.20	5–22–41
Louisiana, South:		
Erath	1.21	5–21–41
Garden Island	1.36	5–21–41
Happytown	1.15	5–20–41
Lafitte, Paradis	1.19	5–21–41
Lake Arthur & Tepetate	1.18	5–21–41
Lake Mongoulois	1.36	5–21–41
Ville Platte	1.20	5–21–41
Texas:		
Alice, Benavides (No. Sweden), Ben Bolt, Clark-Muil, Sun and Tom Graham	1.35	5–21–41
Cayuga	.90	5–21–41
Chapel Hill 50° and up	1.25	3–19–42
Chapel Hill below 50°	1.18	1–20–42
Clay Creek	1.00	5–22–41
Cleveland	1.26	5–21–41
Conroe	1.43	5–21–41
Darst Creek	1.14	5–21–41
Esperson 35° & up; S. Esperson (Sun Oil)	1.30	5–22–41
East Texas, Flag Lake	1.25	5–20–41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5–21–41
Hockley-Cochran Counties	.87	5–21–41
Livingston, Cleveland	1.25	5–20–41
Long Lake	1.23	5–21–41
Luling	1.05	5–21–41
Lytton Springs	1.17	5–21–41
North Rincon	1.35	5–22–41
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5–21–41
Satsuma, Tomball	1.40	5–21–41
Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and up, Humble 35 and up, LaBelle, N. Dayton 25 and up, Oyster Bayou, Seabreeze, S. China, W. Orange and Willow Slough	1.25	5–22–41
South Cotton Lake	1.35	5–22–41
Sun, N. Sun, N. Rincon, Garcia	1.35	5–22–41
Talco	.79	5–21–41
Van	1.08	5–21–41
Yates (Deep)	.95	5–20–41
Yates (Shallow)	.82	5–20–41
Yturria (Sun in S. Texas)	....	....

MICHIGAN PRICES

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw	$1.44	5–27–41
Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin	1.42	5–27–41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield	1.39	5–27–41
Hamilton-Grout	1.29	5–27–41
Adams	1.27	6– 1–41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5–27–41
Southwest (Shallow):		
Traverse, crude in Allegan, Kent, Ottawa, Van Buren Counties	1.45	6– 2–41
Clare	1.11	5–27–41

MIDDLE WEST PRICES

FIELD—	Flat Price	Date Posted
Lima, Ohio	$1.17	5–28–41
Illinois Basin (Sohio Corp.)	1.37	5–19–41
Lake Centralia-Salem, Illinois	1.37	5–19–41
Eastern Ill.-Western Ind.	1.22	5–21–41
Western Kentucky	1.32	5–21–41
Birk City, Western Kentucky	1.32	5–21–41
Kentucky River, Eastern Ky.	1.43	6–19–41
Big Sandy River, Eastern Ky.	1.38	6–19–41

ROCKY MOUNTAIN STATES PRICES

Colorado:		
Canon City and Florence	$0.95	4– 1–41
Iles	.97	4– 1–41
Montana:		
Cat Creek	1.15	4– 1–41
Cut Bank (6 Buyers)*	1.05-1.20	3–30–42
Dry Creek	1.02	5–20–41
Sunburst	1.00	5–20–41
New Mexico:		
Artesia	.94	5–21–41
Hogback	1.00	10–11–38
Wyoming:		
Big Muddy	1.03	4– 1–41
Byron	.55	10–11–38
Elk Basin	1.00	5–21–41
Frannie, Light	.70	5–20–41
Frannie, Heavy	.47	5–20–41
Garland	.50	10–11–38
Grass Creek, Light	1.00	5– 1–41
Grass Creek, Heavy	.50	5–20–41
Hamilton Dome	.45	5–20–41
Lance Creek (Ohio Oil Co.)	1.12	7– 1–41
Mill Creek	.72	10–11–38
Oregon Basin	.40	4–20–40
Osage	1.30	10–11–38
Poison Spider	.59	10–11–38
Rock River	1.15	5–21–41
Tensleep	.6515	2– 1–41

*About 25% of Cut Bank crude brings $1.20 per barrel; 65% less than $1.20 and minimum $1.10; and 10% less than $1.10.

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Current Range (Cents a gal.)		Changes from Month Ago	
Oklahoma Refineries:				
60 Octane and Under	4⅞	5¼	+⅛	...
63-66 Octane	5¼	5⅝	+⅛	...
72-74 Octane	5⅝	6	+⅛	...
80-82 Octane, Ethyl	6⅝	6¾	+¼	—⅛
Mid-Western Tank Car:				
60 Octane and Under	4⅞	5¼	+⅛	...
63-66 Octane	5¼	5⅝	+⅛	...
72-74 Octane	5⅝	6	+⅛	...
80-82 Octane, Ethyl	6⅝	6⅞	+⅛	+⅛
New York Harbor:				
68-70 Octane	11¾	11¾	+2½	+2½
72-74 Octane	11¾	12¾	+2½	+2½
Min. 80 Octane, '39 Research	12⅝	12⅝	+2½	+2½
Gulf Coast:				
60 Octane unleaded	5	5	...	...
65 Octane unleaded	5¼	5⅜	...	...
68 Octane unleaded	5¼	5⅞	...	...
70 Octane unleaded	5¼	5⅝	...	...
72-74 Octane leaded	5⅛	6	—⅛	...
Min. 80 Octane, '39 Research	5½	5½	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	2⅝	2⅝	...	—⅛
F.O.B. Br'kenr'ge, Tex.	2	2	...	—¼
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4⅝	4½	...	...
42-44 water white	4½	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	4⅜	4⅝	...	...
42-44 water white	4½	4½	...	...
New York Harbor	7¾	7¾	+2	+2
Gulf Coast:				
41-43 water white	3⅞	4⅜	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅜	...	...
In Mid-Western Market Group 3, basis	4	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	4¼	...	...
No. 1 straw	3⅞	4	+⅜	...
No. 2 straw	3⅝	4⅛	...	...
No. 3	3½	3½	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	4⅛	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
New York Harbor:				
No. 1	7¾	7¾	+2	+2
No. 2	7⅞	7⅞	+2	+2
No. 3	7⅞	7⅞	+2	+2
Gulf Coast:				
No. 2	3¾	4	...	...

HEAVY FUELS	Current Range (Per Bbl.)		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	$0.80	$0.90	...	...
14-16 Gravity	.95	.95	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.85	...	...
New York Harbor:				
No. 5	2.10	2.25	...	...
No. 6	1.80	1.80	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$0.95	...	...
New York Harbor	1.80	1.80	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.55	$1.68	...	...
New York Harbor	3.24	3.24	+.84	+.84
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	27	27	...	...
150-160 vis. D:				
0-10 pour point	23	23	...	...
10-25 pour point	22½	23	...	...
25-40 pour point	23	23	...	...
150-160 vis. E	22	22	...	..
120 vis. D, 0-10 pour point	22	22	...	...
600 s.r. dark green	8½	8½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	18½	18½	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point):				
Pale Oils:				
60-85 vis. No. 2 color	8	8	...	...
86-110 vis. No. 2 color	8½	8½	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15	...	...
250 vis. No. 3 color	16½	16½	...	...
280 vis. No. 3 color	17	17	...	...
300 vis. No. 3 color	18	18	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15	...	...
280 vis. No. 5 color	...	...	...	...
300 vis. No. 5 color	17½	17½	...	...
Western Pennsylvania:				
Cylinder Stocks:				
600 s.r. filtrable	15	15	...	...
650 s.r.	15½	15½	...	...
600 flash	16	16	...	...
630 flash	17	17	...	...

LUBRICATING OIL (Cents a gal.)	Current Range		Changes from Month Ago	
Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	25	...	...
Viscous Neutrals (No. 3 Color, vis. at 70°):				
200 (180 at 100), 420-425 fl.:				
Zero pour test	40½	40½	...	...
10 pour test	39½	39½	...	...
15 pour test	38½	38½	...	...
25 pour test	33	33	...	...
150 (143 at 100), 400-405 fl.:				
Zero pour test	38½	38½	...	...
10 pour test	37½	37½	...	...
15 pour test	36½	36½	...	...
25 pour test	31	31	...	...

EASTERN STATES CRUDE OIL PRICES

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$3.00	3-26-42
Sw. Pa. Pipe Line	2.65	3-26-42
Eureka Pipe Line, W. Va.	2.50	3-26-42
Corning Grade, Ohio	1.31	5-27-41
Buckeye Crude, Ohio	2.30	6-18-41

MAJOR CRUDE OIL PRICE CHANGES

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
Jan. 1, 1940	Up 25	.....	.....
Feb. 1, 1940	.....	.....	Cut *7
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
April 24, 1941	.....	.....	Up *6
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
May 22, 1941	.....	.....	Up *6
June 18, 1941	Up 20	.....	.....
Aug. 14, 1941	Up 23	.....	.....
Aug. 25, 1941	Cut 23	.....	.....
March 26, 1942	Up 25	.....	.....

* Signal Hill 26 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective May 23, 1941
All gravities above those quoted take highest price offered in that field

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canon	Athens-Rosecrans	Terrance	Richfield	Whittier, East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River, Kern Front, McKittrick, Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Kettleman Hills	Elwood Terrace
14-14.9	....	$0.68	.....	.....	$0.71	.....	.....	$0.70	....	$0.70	$0.70	$0.70	$0.72	....	....	$0.73	....	....	....	$0.73	$0.73	$0.73	....	....
15-15.9	....	.71	.....	.....	.75	$0.76	.....	.72	....	.72	.71	.72	.72	....	....	.....	....	....	....	.73	.73	.73	....	....
16-16.9	....	.74	$0.79	.....	.79	.79	.....	.75	....	.74	.73	.75	.72	....	....	.....	....	....	....	.73	.75	.73	....	....
17-17.9	....	.78	.82	.....	.82	.82	.....	.78	....	.77	.76	.78	.72	....	....	.....	....	....	....	.75	.78	.73	....	....
18-18.9	$0.80	.82	.86	....	.86	.85	....	.81	....	.80	.79	.82	.74	....	....	.....	....	....	....	.78	.81	.73	....	....
19-19.9	.84	.86	.90	.....	.89	.88	.....	.85	....	.83	.82	.85	.77	....	....	Wheeler Ridge	....	....	$0.73	.81	.84	.75	....	....
20-20.9	.88	.90	.94	.....	.93	.92	$0.80	.88	....	.86	.85	.89	.80	....	....	.....	....	....	.76	.85	.87	.77	....	....
21-21.9	.92	.94	.98	.....	.96	.95	.84	.91	....	.89	.89	.92	.84	....	....	.....	....	....	.79	.90	.90	.80	....	....
22-22.9	.96	.98	1.02	$0.88	.99	.98	.87	.95	....	.93	.93	.96	.87	....	....	$0.76	....	....	.83	.94	.93	.83	....	....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	....	.98	....	.97	.98	1.00	.91	....	....	.80	....	....	.87	.99	.96	.86	....	....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	F.O.B.	1.01	....	1.01	1.02	1.03	.94	$0.99	....	.83	....	....	.90	1.03	.99	.89	....	....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	Our	1.04	....	1.05	1.06	1.07	.98	1.02	....	.....	....	....	.94	1.07	1.01	.92	....	....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	Pipe	1.08	....	1.09	1.10	1.11	1.01	1.06	....	.....	....	....	.97	1.11	1.04	.95	....	....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	Line	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	.....	....	....	1.01	1.15	1.07	.98	....	....
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	....	1.14	....	1.17	....	....	1.08	1.13	1.08	.....	....	....	1.04	1.19	1.10	1.00	....	....
29-29.9	1.20	1.21	.....	1.19	1.20	1.20	.....	.....	$1.17	.....	.....	.....	1.12	1.17	1.12	.....	.....	.....	1.07	1.24	1.13	1.02	.....	.....
30-30.9	1.23	1.24	.....	.....	1.23	1.22	.....	.....	1.21	.....	.....	.....	1.15	1.21	1.15	.....	$1.01	$1.09	1.10	1.28	1.16	1.04	.....	F.O.B.
31-31.9	.....	.....	.....	.....	.....	1.24	.....	.....	1.25	.....	.....	.....	1.19	1.24	1.19	.....	1.04	1.12	1.14	.....	.....	1.06	.....	Ship
32-32.9	.....	.....	.....	.....	.....	.....	.....	.....	1.29	.....	.....	.....	1.23	1.28	1.23	.....	1.07	1.14	1.17	.....	.....	1.09	.....	.....
33-33.9	.....	.....	.....	.....	.....	.....	.....	.....	1.32	.....	.....	.....	1.27	.....	1.26	.....	1.10	1.17	.....	.....	.....	1.11	.....	$1.22
34-34.9	.....	.....	.....	.....	.....	.....	.....	.....	1.36	.....	.....	.....	1.31	.....	1.30	.....	1.13	1.20	.....	.....	.....	1.13	.....	1.25
35-35.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.35	.....	.....	.....	1.16	1.22	.....	.....	.....	.....	$1.23	1.28
36-36.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.39	.....	.....	.....	1.19	1.25	.....	.....	.....	.....	1.26	.....
37-37.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.43	.....	.....	.....	1.22	.....	.....	.....	.....	.....	1.29	.....
38-38.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.47	.....	.....	.....	1.25	.....	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

U. S. Field Operations

Illinois Basin

Richland County Gets New Oil Field

First reports for week total 64, set record for year. Richland County wildcat swabs 437 bbls in 19 hours. White County wildcat swabbing oil and water. Jefferson County wildcat recovers oil and salt water in drill-stem test of McClosky.

Richland County: Gulf-Helmerich & Payne's Stiff 1, SE NE NE 35-5n-10e, near Dundas, swabbed 437 bbls in 19 hours from McClosky at 3107-11 ft after 1500-gallon acid treatment to open a new field.

White County: White Eagle Oil Co. and F. H. Brown's J. Britt 1, NE NW SE 23-5s-9e, swabbing 5 barrels of fluid an hour, 80 percent oil, from McClosky 3148-57 ft; is half mile southwest of Carmi in wildcat territory.

Jefferson County: Oil Carriers' Starr 1, C N½ SW SW 1-3-4e, a wildcat, drilling below 3157 ft after recovering 537 ft of oil, 545 ft of salt water and drilling mud in an hour's drill-stem test of McClosky at 3125-30 ft; will be drilled into St. Louis lime.

Lewis Production Co. rigging up rotary tools for State Game Farm 2, SW NW NE 28-3s-3e, offset to company's Farm 1, Aux Vases pool opener.

Wayne County: Sohio Producing Co.'s C. E. Harris 1, C SW SE 19-1s-7e, north offset to Deep Rock Oil Co.'s Blackburn 1, pool opener west of Fairfield, flowed 560 bbls natural in 15 hours from McClosky 3237-40 ft, showing for as good, if not better producer, than discovery. South offset to Blackburn 1, Deep Rock's Sanford 1, SW NE 30-1s-7e, looks dry; show of oil and salt water bailed from McClosky 3196-3201. Gulf's Blackburn-Thomas 1, NE NE 30-1s-7e, east offset, shut down on orders after bailing 60 bbls of water and 3 bbls of oil in 24 hrs following a squeeze in McClosky at 3242-46 ft.

Gallatin County: Murphy Oil Co.'s Spence 1, C N½ NE NW 33-7s-9e, ½-mile south of Cottonwood, milling out opposite Tar Springs 2290-2303 ft, after water was recovered when plug was drilled to Cypress at 2655-75 ft.

Sinclair-Wyoming's Cox 1, SW SW SW 24-7s-8e, wildcat a mile south of White County's Roland field, swabbed water with a trace of oil following a shot in Cypress at 2323-50 ft.

Indiana

Vanderburgh County: What appears to be best producer ever drilled in Vanderburgh County is George E. Nelson and United Petroleum Co.'s Stader 1, NE SE NW 32-6s-11w, two miles southwest of Evansville, which is producing from Waltersburg sand at 1780 ft. It is a 40-acre offset to Sells Petroleum Co.'s McCarty 1, recent Waltersburg sand pool-opener. No production estimate has been made.

Kentucky

Henderson County: In Hebbardsville area, J. W. Carter and E. F. Moran's Reid 1, C S½ 25-P-27, half mile from other production, pumped 160 bbls in 24 hrs from McClosky at 2032-37 ft.

Results on Industry's Prospecting Fronts

During the week 64 wildcat tests were reported completed, including 10 oil producers. Total for the year (and this is the half-way mark) is shown at 1486, including 203 oil strikes.

Michigan: Good well revises Adams field prospects.

California: Week's results negative; six join for Fresno County wildcat.

Gulf Coast: Wildcat work on increase throughout Texas Coast area.

Kansas: New field in Stafford County; two fields extended.

Oklahoma: Earlsboro sand productive at Centerpoint.

East Texas: New Wood County area has quarter-mile extension in sub-Clarksville in prospect.

Union County: Four miles north of Uniontown, Phillips Petroleum Co.'s Clements 1, NW SE SE 1-O-19, had pits dug for an offset to a recently completed Waltersburg sand pool-opener.

ILINOIS FIELD COMPLETIONS

Clay County—Pure's Moseley B 5, se nw 3-2n-8e, Cyp 2608-15 ft, 23 bbls 2615 ft.

N. V. Duncan et al's Schneipp 1, se sw 5-5n-7e, McC 2809-13 ft, 105 bbls 2845 ft.

Clinton County—A. W. Gerson's Cowley 1, sw sw ne 14-1n-1w, abnd 1634 ft.

F. Mitchell's Phoenix 1, se sw nw 14-1n-1w, abnd 1432 ft.

Texas Co.'s Grey Comm. 3, sw sw se 35-3n-2w, Ben 1185-1212 ft, 190 bbls, 1212 ft.

Edwards County—Seaboard's Rothrock 1, c n½ sw ne 6-1n-14w, McC 3135-41 ft, 435 bbls, 3141 ft.

Cities Service's Drury 1, se se sw 7-1s-11e, McC 3228-30 ft, 19 bbls, 3263 ft.

Hamilton County—Texas Co.'s Johnson 2, nw nw nw 13-6s-6e, AV 3080-95 ft, 243 bbls, 3105 ft.

Jasper County—Olson's Kraus 1, nw se nw 6-5n-14w, McC 2857-59 ft, 66-68 ft, 80 bbls, 2878 ft.

R. R. Powers et al's Hall B 1, 100 ft n of c e½ se ne 19-5n-10e, Cyp 2492-2505 ft, 38 bbls, 2531 ft.

Marion County—National Petro's Crawford 1, c e½ nw se 15-4n-1e, abnd 1270 ft.

National Petro's Smith 1, nw nw sw 16-4n-1e, abnd 1360 ft.

Richland County—Pure's Veit 4, nw sw 23-4n-9e, Weil 2579-81 ft, 85-97 ft, 32 bbls, 2985 ft.

Pure's Murvin B 2, c sw nw 27-4n-9e, abnd 3063 ft.

Wabash County—Ray Steele's Stringman 1, c w½ sw se 35-2n-12w, Ben 1980-90 ft, 75 bbls, 1990 ft.

Wayne County—J. Sanders' Gill 1, se c ne nw 24-2n-7e, AV 2910-32 ft, pb 2932 ft, 20 bbls, td 3072 ft.

First Nat'l Petro's Ellis Comm. 1-A, sw se 18-1s-5e, AV 2940-50 ft, 210 bbls, 2970 ft.

Gulf's Wilson 1, c ne ne 19-1s-5e, AV 2889-2919 ft, 104 bbls, 2919 ft.

Frazier's Gregg 1, c w½ ne nw 26-1s-6e, abnd 3248 ft.

Frazier et al's Thomas 2, c w½ nw nw 27-1s-6e, McC 3191-99 ft, 3210-16 ft, 250 bbls, 3242 ft.

Texas Co.'s Belford 1, c w½ ne ne 29-1s-6e, McC 3182-94 ft, 58-65 ft, 248 bbls, 3194 ft.

Bell Bros.' Fuhrer 6, c w½ ne ne 33-1s-6e, McC 3148-54 ft, 59-66 ft, 286 bbls, 3175 ft.

Horn & Faulkner's Kerney 1, ne ne nw 9-2s-7e, McC 3267-87 ft, 17 bbls, 3287 ft.

Texas Co.'s Taylor 1, c n½ sw ne 7-3s-6e, McC 3329-48 ft, 164 bbls, 3348 ft.

Texas Co.'s Vincent 1, c n½ ne nw 18-3s-6e, abnd 3379 ft.

Texas Co.'s Goudy 1, c e½ se ne 16-3s-7e, abnd 3410 ft.

White County—Tide Water's Evans 12, ne c sw nw 4-4s-14w, AV 2786-2820 ft, 103 bbls, 2820 ft.

Ivan White et al's Lomas 1, sw nw sw 14-4s-14w, Tar Spgs 2228-42 ft, 38 bbls, 3035 ft.

Cal Starr Petro.'s Miller-Ford 19-B, sw nw se 21-4s-14w, AV 2834-43 ft, 135 bbls, 2855 ft.

Magnolia's Mejewski 3, se ne ne 22-4s-1w, abnd 1630 ft.

Sun's Spencer 1, sw nw sw 8-4s-10e, Ben 2960-76 ft, 64 bbls, 3099 ft.

Tide Water's Beacon 11, nw ne 5-5s-14w, AV 2853-80 ft, 167 bbls, 2980 ft.

[*Continued on Next Page*]

U. S. Drilling Operations in Week Ended July 4, 1942

STATE	ALL WELLS COMPLETED — THIS WEEK Total	Oil	Gas	Dry	*Miscel.	Total 1942	Total this Date 1941	‡WILDCATS COMPLETED — THIS WEEK Total	Oil	Gas	Dry	Distillate	Total 1942
Alabama						3	1						3
Arkansas	3	3				69	82						7
California	13	9		4		365	558	4			4		19
Colorado						5	9						
Georgia						2	1						2
Illinois	41	26		15		932	1,741	7	2		5		252
Indiana	3			3		197	260	1			1		33
Iowa							2						
Kansas	28	12	1	15		820	1,092	11			11		194
Kentucky	3			1	2	75	154	1			1		15
Louisiana	22	17		5		538	706	1			1		80
Michigan	9	2	2	5		352	408	1			1		87
Mississippi	2	1		1		67	86						17
Missouri						15	32						
Montana	4	1	3			88	98						
Nebraska						25	41						11
New Mexico	5	4		1		209	176						13
New York	26	14			12	598	415						1
Ohio	22	4	10	7	1	561	827						
Oklahoma	20	12	1	7		776	1,050	8	2		6		151
Pennsylvania	40	33	5	1	1	1,512	1,997						
Tennessee						2	11						
Texas	82	47	1	31	3	3,250	4,945	30	6		24		598
Virginia						1							
West Virginia	12	4	5	3		361	341						
Wyoming	5	4		1		42	58						3
Total this week	340	193	28	100	19	10,865	15,091	64	10	....	54	....	1,486
Total last week	388	215	35	112	26	10,525	14,443	83	13	1	68	1	†1,422
Total this year	10,865	6,238	876	2,784	967	.....	.....	1,486	203	22	1,256	5	.....

* Includes old wells deepened, water intake, gas input, salt water disposal, and distillate wells.
‡ OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.
† Revised.

R. Halbert's McQueen 1, ne ne ne 6-6s-10e, abnd 2135 ft.
Skelly's Hubele 1, sw nw nw 18-6s-11e, abnd 2262 ft.
Gulf's Moore 3, se nw 12-7s-8e, multiple sands, 21 bbls, 3060 ft.

ILLINOIS WILDCAT COMPLETIONS

Clark County: Failure—D. E. L. Byers' Kannmacher 1, c se se 23-10n-13w, abnd 650 ft.
Clay County: Failure—Lane & Thorp's Moncal Comm. 1, ne sw 32-5n-7e, abnd 2996 ft.
Franklin County: New Field—Jack Darnell's Old Ben Coal 1, ne se ne 20-5s-2e, AV 2706-2711 ft, 32 bbls, 2715 ft.
Hamilton County: Failure — Kingwood's Thomas 1, se se 11-4s-7e, abnd 3494 ft.
Marion County: Failure—P. K. Degenther's Hagon 1, nw se 2-4n-4w, abnd 782 ft.
Richland County: Failure—Dawson & Martin's Smith 1, c e½ sw se 22-2n-10e, abnd 3302 ft.
White County: New Field — Magnolia's Pearce Tr. 1, ne nw sw 35-6s-10e, L O'H 2890-98, 90 bbls, 3028 ft.

ILLINOIS WILDCAT STARTS

Franklin County—Oil Carriers Inc.'s Franklin Coal Co. 2, c w½ nw nw 22-7s-1e, dr.
Hamilton County—Texas Co.'s Minton 1, c e½ se ne 20-4s-7e, lcn.
Ohio's Moore 1, ne se nw 35-6s-5e, lcn.
Ohio's Miller 1, nw nw nw 25-6s-6e, lcn.
Jasper County—Sinclair-Wyoming's Kinsel 1, c e½ nw ne 29-7n-10e, lcn.
Marion County—National Pet. Co.'s Smith 1, nw nw sw 16-4n-1e, completed.
Perry County—J. N. Harsh's Bagwell 1, c nw sw 28-4s-1w, lcn.
St. Clair County—C. W. Young's Sauerwein 1, se se nw 29-3s-6w, dr.
Wayne County — Mabee Oil & Gas Co.'s Borah 1, c w½ nw nw 22-1s-9e, lcn.
Albright et al's Collins 1, c w½ sw se 24-1s-9e, dr.
Lario Oil & Gas Co.'s Culp 1, c e½ ne ne 7-3s-5e, lcn.
White County—Cherry & Kidd's O. Smith 1, sw ne sw 15-4s-14w, lcn.
Sun's Bixenstine "B" 2, sw se nw 6-4s-10e, lcn.
N. E. Marshall's Norris City Bank 1, nw nw nw 32-6s-9e, lcn.

INDIANA FIELD COMPLETIONS

Daviess County—General's Singleton 2, 160 ft w of sw sw 21-2n-7w, abnd 928 ft.
Mid-Sun et al's Lashley 1, c s½ sw se 9-2n-6w, abnd 762 ft.

INDIANA WILDCAT COMPLETIONS

Posey County: Failure—C. C. Nye et al's Klenck 1, c ne nw 23-5s-12w, abnd 2802 ft.

INDIANA WILDCAT STARTS

Posey County—Cherry & Kidd's Bailey 1, c e½ se ne 4-5s-13w, lcn.
Spencer County—Ira Huff et al's Huser 1, nw nw ne 31-6s-5w, lcn.

KENTUCKY WELLS DEEPENED

Hancock County—J. C. Ellis' Mason 11, 14-O-34, otd 382 ft, abnd 784 ft.
McLean County—J. C. Ellis' Howard 15, 22-M-29, otd 1114 ft, abnd 1339 ft.

KENTUCKY WILDCAT COMPLETION

Henderson County: Failure—P. J. Reilly et al's Rash 3, 6-P-27, abnd 2000 ft.

KENTUCKY WILDCAT START

Henderson County—Carter Oil Co.'s Spencer 1, 25-P-21, lcn.

NEBRASKA WILDCAT STARTS

Richardson County—E. H. Towle et al's Horolek 1, ne ne ne 29-2n-13e, cellar.
Washington County—H. Bredthauer's Bredthauer 1, c sw ne 28-17n-12w, spud.

MISSOURI WILDCAT STARTS

Holt County—F. C. Miller's Mutual Benefit 1, c e½ se se 32-60n-37w, rig.
Ray County—Wm. Peppas' Miller 1, se se se 8-53n-28w, dr.

Oklahoma

Centerpoint Has Production From Earlsboro Sand

Earlsboro sand proven productive in Centerpoint field. Two offsets start at McComb (Hamil). Kingfisher County deep test nearing objectives. Upper zone pays off near Navina.

Pottawatomie County: Atlantic has made two locations offsetting their completed Hamil 1, discovery well of McComb, which completed for 1500 bbls daily after considerable testing and cleaning out. Locations are for Henderson 1, CSE NW 27-8-3e, to the north, and Blythe 1, CNW SE 27-8n-3e, to the south of the discovery.

C. W. Sharp's Brundage 1, NEc 12-9-2e, is a near-completion in Earlsboro sand to prove the second pay for Centerpoint field, the first being dolomite. Depth is 4925-5066 ft, with tests showing as high as 12,000,000 cu ft gas and oil accompanying drilling mud.

Logan County: Cities Service's Underwood 1, SW SW SW 11-5s-4w, ¾-mi south of South Navina pool, plugged back to shoot Layton sand, 4978-5100 ft, and tested good for 30 bbls daily. Wilcox sand, 6747 ft, proved dry.

Kingfisher County: Union Oil Co.'s Brown 1, SE SE NW 11-19-9w, wildcat on the eastern edge of western Oklahoma's Anadarko Basin found Hunton lime 1636 ft thick, somewhat thinner than some had anticipated. Well is below 7880 ft, with Sylvan topped at 7788 ft and strata typically hard.

OKLAHOMA FIELD COMPLETIONS

Bryan County: Cumberland—Pure's Park College 2, ne sw se 27-5s-7e, Hunton 3888 ft, pb 4250 ft, 5,160 gas, 7129 ft.
Caddo County: Apache—Texas Co.'s Oxley 1, ne se se 35-6n-12w, abnd 4967 ft.
Creek County: Hickory Grove—Shell's Seaton 1, se se ne 3-14n-7e, Bartles 3118 ft, perf flow 60 bbls oil, 82 bbls wtr, 9.1 gas, pb 3169 ft, td 3252 ft.
Creek County: Cushing—Sinclair Prairie's Yarhola 20, sw ne ne nw 9-17n-7e, Bartles 2672 ft, pay 2798-48 ft, 80 qts, pump 26 bbls, 2750 ft.
Creek County: Walker—Central Commercial's Pinehill 2, sw ne se 16-17n-9e, sand 2451 ft, pay 2457-70 ft, 40 qts, 60 bbls, 2470 ft.
Logan County: Crescent—Gulf's Campion 3, c se sw 27-17n-4w, Layton 4875 ft, flow 332 bbls ¾-in, 4915 ft.
Continental's Katschor 1, sw ne nw 34-17n-4w, Layton 4893 ft, shot 40 qts 4912-28 ft, flow 224 bbls, 4980 ft.
Oklahoma County: Oklahoma City—Phillips' Capitol 1, nw sw nw ne 27-12n-3w, Wilcox 6432 ft, shot 180 qts, pump 647 bbls, 6560 ft.
Okmulgee County: Natura — Phillips & Wright's Long 1A, se c ne 18-15n-13e, Glenn 1407-77 ft, pb 1466 ft, shot 70 qts, pump 10 bbls oil, 15 bbls water, 1477 ft.
Pottawatomie County: E. Tecumseh—Crosbie & Atlantic's State 7, sw sw 16-9n-4e, Viola 4598 ft, Dense 4652 ft, 5000 gals acid, pump 257 bbls, 4657 ft.
Pottawatomie County: W. Hotulke—Atlantic's Nisbett 3, nw ne nw 27-9n-4e, 2nd Wilcox 4631 ft, perf, pump 552 bbls oil, 4662 ft.
Stephens County: Empire—Cities Service's Surber 35, nw se ne sw 33-1s-8w, sand 2248 ft, perf, pump 92½ bbls, pb 2310 ft, td 2350 ft.

OKLAHOMA WILDCAT COMPLETIONS

Carter County: Failures—Carter's Hernstadt 1, c ne ne 24-4s-2w, Barlow 3635-55 ft, cored 3722-32 ft, 8 ft sand light stain, tite lime 4722-32 ft, sand 4732-47 ft, shale and sand 5360-85 ft, stain, shale 5385-89 ft, cored 5390-98 ft, 19 in brn shale, sand with stain 5930 ft, cored 5933-36 ft, rec 3 in sand stain and 3 ft shale, dry sand 6494-6705 ft, drld to 6868 ft in lime, cored 6989-7000 ft, rec 8 calc shale, abnd 7500 ft.
Hernstadt's Public Natl 2, c nw se 29-3s-3w, Deese 2300 ft, cored 4168-82 ft, 11 ft sdy shale and shale, sand and lime 4685-4722 ft, lime 4722-32 ft, sand 4732-47 ft, shale and sand 4810-30 ft, abnd 5003 ft; may drill ahead.
Creek County: Failure—Superior's Anthis 1, sw nw se 34-16n-7e, Avant 1580 ft, Dewey 1670 ft, Hogs 1990 ft, Layton zone 2055-2147 ft, Osw 2825 ft, Pink lm 3050 ft, Miss 3518 ft, Viola 3985 ft, Wx 4044 ft, abnd 4090 ft.
Jefferson County: Failure—Gulf's Edwards 1, c nw ne 35-3s-6w, topped Arb. 3565 ft, abnd 3715 ft.
Kiowa County: Failure—E. M. Thompson's Baker 1-A, nw ne nw 7-6n-18w, granite wash showing gas 1100-64 ft, 1165-70 ft, 1180-90 ft, and 1249-56 ft, abnd 1258 ft.
Noble County: New Field—Danciger et al's Province 1, nw nw sw 4-20n-2w, Oread 3090 ft, Tonk 3380 ft, Avant 3745 ft, U Lay 4000 ft, M Lay 4090 ft, Wx 4145 ft, Miss 5114 ft, Wood 5142 ft, Viola 5198 ft, Dense 5360 ft, Dolo 5280 ft, 1st Wx 5315 ft, 2nd Wx 5396½ ft, dst 5391-5404½ ft, open 35 mins, 445 ft of free oil 180 ft oil cut mud, ran 7-in to 5397 ft, swbd dry, perf 23 holes, 5394-5404 ft, flow 480 bbls 5404½ ft.
Noble County: New Field—Deep Rock's Schultz 1, nw sw se 9-22n-2e, Dewey 2635 ft, Lay 2675 ft, Big Ls 3605 ft, Osw 3660-3825 ft, Miss 4178 ft, Wood 4406 ft, Viola 4440 ft, Dense 4462 ft, Dolo 4476 ft, sdy dolo 4485 ft, Dolo 4503 ft, 2nd Wx 4515 ft, green shale 4579-85 ft, Arb 4718 ft, cored 4568-75 ft, 5 ft dark shale and quartz, sdy congl, 1260 bbls oil and 101 bbls water, 4597 ft.
Tillman County: Failure — Culham Pet.'s Stone 1, c ne ne ne 4-3s-17w, Lm 2840-50 ft, Caney 2902 ft, cored 3680-94 ft, 5 ft soft dolo ls, 3 ft shly dolo lm and 3 ft sdy dolo ls, stain and odor, limey congl 4100-15 ft, Miss 4550 ft, Viola 4580 ft, Simp 4600 ft, Green shale 4610 ft, Arb 4860 ft, hard lime 4880-84 ft, perf 30 holes 2945-55 ft, show oil, gas and water, squeezed, rec 300 ft fluid show oil and salt water, bailed out to 4200 ft, hole filled within 400 ft of top water, abnd 4888 ft.

OKLAHOMA WILDCAT STARTS

Carter County—Scott's Simpson-Fell 1, c sw ne sw 8-5s-1e, lcn.
Garvin County—Harry Culver et al's Hart 1, c se se 29-3n-1e, mim.
Logan County—Fain-Porter's Cessna 1, sw nw se 27-15n-3w, lcn.
W. A. Preston et al's Smith 1, ne se ne 31-17n-3w, lcn.
McIntosh County—Garrett's Escoe 1, c sw 16-13n-17e, shut in.
Noble County—Magnolia & Wilcox's Janke 1, se se ne 10-21n-2e, lcn.
Kubat et al's Tyler 1, ne ne se 7-21n-3e, lcn.
Osage County—Ohio Osage's Osage 1, nw nw se 32-22n-9e, dr.
Payne County—Wilcox Oil & Gas' Howell 1, nw se se 14-17n-3e, lcn.
Pottawatomie County—J. C. Bucy et al's Reed 1, ne ne sw 20-8n-4e, lcn.
Ohio's McQuiston 1, c nw ne 23-9n-3e, lcn.
Creekmore-Rooney's Tiller 1, se nw nw 32-10n-5e, dr.
Seminole County—Wood Oil Co.'s Ligon 1, ne nw se 30-8n-6e, mchy.

Kansas

McPherson County Fields Being Extended

Lindsborg and South Lindsborg pools being extended in Viola lime. New Arbuckle field for central Stafford County. Russell field has acreage added.

McPherson County: An edge well at at the northwest corner of Lindsborg field is showing for production prior to acid treatment with a fillup of 600 ft; Mabee's Carlson 1, CW½ SW SE 6-17-3w, with hole bottomed at 3374 ft in lime.

Three miles south of Carlson 1, Dickey's Lander 1, CWL NE NW 19-17-3w, at 3369 ft in the pay has treated and is testing. The well had a partial fillup prior to acid. These two wells and adjacent production now constitute more than a section of proven Viola lime pay.

Stafford County: W. Faulkner's Ward 1, CE½ SE SW 21-21-13w, northwest of Sittner field has 1800 ft oil standing in the hole from Arbuckle lime, 3703 ft.

Russell County: A. H. Witt's Fleet 1, SW SW NE 3-14-14w, 3 locations southeast of Russell field, filled 2200 ft in 18 hrs, from Kansas City-Lansing to add 300 acres to the pool's area.

Phillips County: Helmerich & Payne's Teagarden 1, CNW SE 33-5s-18w, just north of the Rooks County line, is a wildcat location in an area of Basal sand activity.

KANSAS FIELD COMPLETIONS

Barton County: Kraft-Prusa—Skelly's Esfeld 7, 150 ft s of nw ne 30-16s-11w, Lansing 3020 ft, pay 3039-42 ft, pay 3065-69 ft, perf 4000 gals acid, flow 75 bbls, tbg, 3288 ft.
Barton County: NE Kraft-Prusa — J. J. Lynn's Smith A-1, c s½ ne nw 1-17s-11w, Arb 3407 ft, abnd 3430 ft.
Greenwood County: Beaumont — K. T. Weidemann's Lewis D-2, c se se 26-27s-8e, Miss 2456 ft, 1000 gals acid, pump 50 bbls, 5% water, 2468 ft.
Leavenworth County: McLouth—McLaughlin's Borst 1, c w½ ne 1-10s-20e, Miss 1473 ft, small show oil 1425-30 ft, abnd 1502 ft.
McLaughlin et al's Watson 1, c ne nw 12-10s-20e, sand 1356-65 ft, 3.0 gas, 1365 ft.
Marion County: Lost Springs—Derby Crow Drlg.'s Watson 1, c se se 29-17s-4e, Lansing 2390 ft, pump 411 bbls, 2407 ft.
McPherson County: Henne—W. C. McBride's Anderson B-1, c s½ sw sw 16-17s-1w, Miss 2625 ft, fill 2500 ft oil, 3000 bbls, 2638 ft.
McPherson County: Lindsborg—Dickey Oil's Rundburg 1, c w½ nw ne 19-17s-3w, Viola 3358 ft, 6500 gals acid, pump 891 bbls, 3363 ft.
Reno County: Hendrickson—Transwestern's

Withroder 1, sw sw nw 1-23s-10w, Viola 3702 ft, 2000 gals acid, 3000 bbls, 3725 ft.

Cities Service's Henshaw A-4, sw sw se 2-23s-10w, Viola 3737 ft, 2000 gals acid, 1041 bbls, 3751 ft.

Cities Service's Hinshaw 5, c nw sw 2-23s-10w, Viola 3738 ft, 2500 gals acid, pump 171 bbls, 3760 ft.

Reno County: Peace Creek—Cities Service's Kreie A-3, sw sw ne 28-23s-10w, Viola 3799 ft, 2500 gals acid, pb 3802 ft, abnd 3815 ft.

Rice County: Bornholdt—Westgate-Greenland's Johnson 1, c s½ se nw 24-20s-6w, Miss 3257 ft, pump 20 bbls oil, 3 bbls water, 3318 ft.

Rice County: Raymond — Anderson-Prichard's Yeo B-1, c n½ sw ne 30-20s-10w, Lansing 2980 ft, pay 3088-94 ft, 3069-74 ft, perf 5000 gals acid, pump 25 bbls oil, plus 76% water, 3314 ft.

Russell County: Fairport — Stanolind's Booth B-3, c w½ sw ne 29-11s-15w, Lansing 2903 ft, pb 3240 ft, pay 3120-30 ft, 3093-3100 ft, 2500 gals acid, 324 bbls oil and 70 bbls water, 3345 ft.

Russell County: Gorham — Wolf Creek's Rouback 4, c e½ se ne 15-14s-15w, Gorham 3262 ft, pump 311 bbls, 3263 ft.

Stafford County: Stafford — Stanolind's Kolfs 1, c ne nw 15-24s-12w, Viola 3861 ft, pb 3864 ft, abnd 4037 ft.

KANSAS WILDCAT COMPLETIONS

Butler County: Failure—Max Cohen et al's Price 1, c s½ se se 8-29s-6e, Peru 2478-2535 ft, abnd 2535 ft.

Douglas County: Failure—Union Gas' Williams 1, c nw nw 31-12s-19e, Lansing 413 ft, Base KC 775 ft, sand 1381-1435 ft, Miss 1523-50 ft, abnd 1680 ft.

Jefferson County: Failures—McLaughlin et al's Gillen 1, c nw sw 2-8s-18e, sand 1579-86 ft, sand 1700-05 ft, Miss 1724-70 ft, abnd 1770 ft.

McLaughlin's Piazzek 1, c se sw 5-8s-18e, sand 1418-48 ft, water sand 1690-96 ft, abnd 1696 ft.

Frank Whitten's Courtney 1, c sw ne 15-9s-20e, base Hertha 715 ft, sand 1348-75 ft, abnd 1392 ft.

Marion County: Failure — Zimmerer & James' Melcher 1, se se ne 20-18s-4e, Miss 2388 ft, abnd 2456 ft.

McPherson County: Failure — Three Way Drlg's Slabach 1, nw nw sw 2-20s-5w, Anhy 775 ft, Topeka 2257 ft, Lansing 2838 ft, Miss 3435-81½ ft, abnd 3481½ ft.

Rush County: Failure—Cities Service's August 1, sw se nw 36-10s-17w, Lansing 3309 ft, Arb 3668-3701 ft, abnd 3701 ft.

Shawnee County: Failure—Gulf's Peterson 1, sw se sw 20-15s-16e, abnd 2217 ft.

Stafford County: Failures—Stanolind et al's Gillmore 1, nw sw nw 29-23s-14w, stain 3676-96 ft, Lansing 3595 ft, Viola 3992 ft, Simpson 4011 ft, Arb 4065 ft, cored 4067-74 ft, abnd 4184 ft.

Stanolind's Vincent 1, c e½ sw se 5-24s-11w, Lansing 3386 ft, Congl 3680 ft, Kinder 3703 ft, Viola 3768 ft, 2500 gals acid, Simpson 3871 ft, Arb 3937 ft, pb 3799 ft, 20 qts 3792-96 ft, abnd 3949 ft.

KANSAS WILDCAT STARTS

Barton County—Vickers Pet. Co.'s Prose 1, se ne nw 36-17s-14w, mim.

Continental's Miller 1, ne ne ne 21-16s-14w, rur.

Edwards County—Herndon Drlg.'s Rudd 1, se se se 19-24s-16w, dr 2510 ft.

Ellis County—John M. Cole et al's Drelling 1, ne nw se 3-14s-16w, lcn.

Phillips County—Helmerich & Payne's Teagarden 1, c nw se 33-5s-18w, lcn.

Rice County—Cities Service's Wolf 1, se se ne 6-21s-6w, lcn.

Rooks County—Cities Service's Dorr 1, ne nw ne 20-9s-16w, pits.

Russell County—Herndon Drlg.'s Kunz 1, se se nw 19-14s-15w, survey.

Sedgwick County—Ruso Drlg. et al's Puetz 1, c s½ se ne 1-28s-4w, dr 690 ft.

Washington County—Gulf's Baker 1, c n½ sw nw 1-1s-2e, rig.

NEW MEXICO COMPLETIONS

Eddy County—Aston et al's State 1, 31-17s-28e, abnd 531 ft.

Barney Cockburn et al's State-Tidal 1, c nw sw 36-16s-30e, flow 96 bbls ¼-in, shot 180 qts 2971-3940 ft, td 3080 ft, pb to 3040 ft.

Sanders Bros.-F. Warren et al's Grier 1, c se sw 30-16s-31e, flow 250 bbls natural cas, 3156-57 ft.

Sanders Bros.-F. Warren et al's Grier 2, c ne sw 30-16s-31e, flow 200 bbls natural cas, 3070-83 ft, td 3138 ft.

Sanders Bros. et al's Leonard 4-E, c sw se 33-16s-30e, flow 162 bbls natural 2-in, 2918-27 ft, td 2950 ft.

Line Completed

Phillips Petroleum Company has completed a 5-mile 4-inch oil line from Embar pool, Andrews County, West Texas, where the company recently completed a prolific Ellenberger producer that set in motion a major drilling program on nearby short-term leases, to Gulf Refining Company's gravity-line that serves the North Goldsmith field.

West Texas

Andrews County Test Has Show in Lower Permian

Projected Ordovician prospect in southwestern Andrews County logs favorable porosity and oil saturation in Lower Permian. Development of short-term leases on University lands in Andrews County continues to expand.

Wildcat Failures: Rowan Drilling Co.'s Hughes 1, Regan County, encountered sulphur water 3122-28 ft. Redfern et al's Wright 1, 5 miles northwest Slaughter field, Cochran County, logged water in projected pay zone, and awaiting orders at 5004 ft.

Andrews County: Atlantic-Pete Wiggins and Ed Hyde's University-Texu 1-A, C SE NE Sec 9, Blk 12, scheduled Ordovician test, 12 mi southwest of Fullerton deep pool and 9¼ mi northwest of West Andrews, nearest production, was due to make drill-stem test near 7110-ft level after logging oil-stained and saturated lime below 7020 ft. This zone is the lower Clear Fork, being equivalent of Fullerton pool's oil zone, and is also present in Embar pool. University-Texu 1-A logged Yates frosted grains 2865 ft and San Andres lime 4080 ft, elev 3311 ft.

Humble's Sims 1, 12½ miles west of Fullerton pool, drilling white lime 8260 ft, and scheduled to continue to Ellenburger. Entered Clear Fork 6130 ft, elev 3495 ft, with light porosity and oil stain in Fullerton section 7480-7555 ft.

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Andrews County, where a substantial drilling program is underway to forestall lease expirations, added 2 qualifying completions, including Skelly's University 1-J, pumped 134 bbls, 5% bs&w, after acidizing 4340-4510 ft, elev 3210 ft. The 2½-mile interval between this pool and West Fuhrman partially linked when Skelly's University 1-H, C NW NW Sec 14, Blk 11, swabbed small volume cut oil before acidizing 4488 ft. Topped brown lime 4040 ft and gray lime 4220 ft, elev 3212 ft, being 48 ft low on both markers to its University 1-J. In West Andrews pool, Atlantic authorized 3 new tests.

Lamb County: Stanolind's Hopping 1, ½-mile southeast Fieldton, abnd in granite 9600-06 ft, elev 3561 ft, being 2535 ft low to recent granite failure in southeastern Hale County. Hopping 1 logged Mississippi 9040 ft and top Ellenburger 9455 ft. It is the first Ordovician test on the north flank of the deep-seated granite range that extends east-west across Permian Basin.

Wildcat Projects: Six scheduled deep tests were accounted for the past week, and more are pending. Majors are taking the initiative in this expanded wildcat program, with a preference for prospects that offer possibilities of Lower Permian and Ordovician pays.

Big Well: Gulf's McElroy 270, SW SW Sec 188, Blk F, Upton County, recorded big flow for east side of Gulf-McElroy field, gauged 2020 bbls open 12 hours, nitro shot at 2670-2861 ft.

WEST TEXAS FIELD COMPLETIONS

Andrews County: Mascho—Magnolia's University 1-26, c nw nw sec 26, blk 10, elev 3219 ft, pump 44 bbls oil 39 bbls water, shot 170 qts 4460-4500 ft.

Skelly Oil Co.'s University 1-J, c se se sec 22, blk 10, pump 134 bbls, plus 5% bs&w, acid 7500 gals 4354-4510 ft.

Andrews County: West Fuhrman—Fuhrman Pet. Corp.'s Thornberry 2, 560 ft out nwc PSL 23, blk A-42, flow 216 bbls ⅛-in, acid 3000 gals 4355-4580 ft.

Cochran County: Slaughter—Magnolia's Dean 5-A, 1980 ft out sec lse, leag 58, Martin CSL, flow 39 bbls, 27,466/1 gas ratio, 2-in, acid 10500 gals, td 4954 ft.

Crane County: Gulf-Waddell—Gulf's Waddell 54, ne sw se PSL 10, blk B-23, flow 11,143 bbls, gas/oil ratio 343/1, open, acid 5000 gals 3480-95 ft.

Crane County: Sand Hills—Humble's Tubb 68, nwc PSL 5, blk B-32, flow 413 bbls, 2-in, acid 5000 gals, perforations 4360-4405 ft, td 4590 ft.

Ector County: Goldsmith—Gulf's Goldsmith 390, 2157 ft from w and 1329 ft from n lines T&P 18, blk 44, flow 286 bbls, 2-in, acid 4000 gals, td 4272 ft.

Ector County: North Cowden—Stanolind's Midland Farms 4-A, 784 ft from n and 726 ft from w T&P 46, blk 42, T-1-N, pump 629 bbls oil, plus 70 bbls water, shot 730 qts 4615-4860 ft, td 4892 ft, pb to 4880 ft.

Gaines County: Cedar Lake—Geo. P. Livermore, Inc.'s Jones-Humble 2, c sw sw PSL 2, blk C-30, swab 406 bbls natural, 4665-4770 ft.

Gaines County: Wasson—Amon G. Carter's Sharp 7, nw ne sw PSL 47, blk AX, flow 1137 bbls 2-in, acid 9000 gals 4875-4960 ft.

Hockley County: Slaughter—Honolulu's Frazier 17, 2083 ft from s and 1837 ft from e PSL 10, blk X, flow 2057 bbls 2½-in, acid 10,000 gals 4900-90 ft.

Honolulu's Frazier 18, 1920 ft from n and 1795 ft from e PSL 10, blk X, flow 1646 bbls 2½-in, acid 10,000 gals 4860-4960 ft.

Honolulu's Frazier 19, 2083 ft from s and 3354 ft from e PSL 10, blk X, flow 2019 bbls 2½-in, acid 10,000 gals 4890-4990 ft.

Honolulu's Mallet 17-A, 560 ft out sec lab 20, leag 52, Scurry CSL, flow 433 bbls 2½-in, acid 10,000 gals 4988-5035 ft.

Honolulu's Slaughter 38-B, swc lab 24, leag 37, Zavalla CSL, flow 980 bbls 2½-in, acid, 10,000 gals 4915-5000 ft.

The Texas Co.'s Mallet 8-C, sec lab 13, leag 51, Scurry CSL, flow 747 bbls, cas, acid 10,000 gals 5030-43 ft.

Western States Gasoline Corp.'s Coons-Humble 5, 1379 ft from n and 495 ft from w PSL 11, blk X, flow 1731 bbls cas, acid 11,000 gals 4935-5010 ft.

Pecos County: Abell—Stanolind's Silverman 1, 565 ft from se and 559 ft from sw lines H&TC 10, blk 3, flow 1214 bbls natural ½-in, McKee sand perforations 5354-62 ft, td 5390 ft.

Reagan County: Barnhart—Amerada's University 1-R-F, c ne se sec 2, blk 48, flow 509 bbls ½-in, acid 5000 gals Ellenburger, td 9177 ft.

Upton County: Gulf-McElroy—Gulf's McElroy 270, 1707 ft from n and 387 ft from w sec 188, blk F, flow 3334 bbls open, shot 805 qts 2670-2861 ft.

Ward County—Jas. H. Snowden-L. H. Freedman et al's Wristen-Gulf 6-A, 2332 ft from ne and se lines H&TC 18, blk 5, pump 309 bbls (natural) 2440-2601 ft.

Winkler County: Keystone—Parker Drlg. Co.'s Bashara 1, 440 ft from s and 3300 ft from e lines PSL 21, blk 77, flow 50 bbls ½-in, shot 250 qts 3350-3443 ft, td 3465 ft.

Yoakum County: Wasson—American Liberty and Atlantic's Morris-Texaco 2, c se se sec 732, flow 511 bbls, plus 2½% bs&w, gas lift, acid 10,000 gals 5080-5179 ft.

WEST TEXAS OLD WELL DEEPENED

Runnels County: Beddo—Art Tucker et al's King 4-A, 200 ft out nwc tr, blk 51, Diaz sur 532, pump 52 bbls oil and 5 bbls water, 2292-2317 ft.

WEST TEXAS WILDCAT COMPLETIONS

Concho County: Failure—E. L. Nixon-E. B. Abernathy's Riley 1, 585 ft from s and 919 ft from e C. C. F. Blanchard sur 1705, elev 2000 ft, abnd 900 ft.

Lamb County: Failure—Stanolind's Hopping 1, c se sw sec 25, blk T, T. A. Thomason sur, ½ mi se Fieldton, elev 3561 ft, anhydrite 1535 ft, salt 1720 ft, San Andres or Blaine 3000 ft, Mississippi 9040-9455 ft, Ellenburger 9455-9600 ft, abnd granite 9600-06 ft.

Pecos County: Wentz Pool New Pay—Gulf and L. H. Wentz's Millar 3, c se nw H&GN 43, blk 11, elev 2544 ft, Ellenburger 4167-4376 ft, Cambrian (Hickory sand) 4378-4392 ft, top schist 4392 ft, pump 132 bbls 38.8-gr, shot 45 qts 4378-92 ft, td 4406 ft in schist.

Reeves County: Failure—J. W. Byrd et al's Ligon-State 1, 467 ft out nwc H&GN 22, blk 7, abnd 1230 ft.

Upton County: Failure—Porter Rankin-M. & M. Prod. Co.'s Good 1, c sw sw HE&WT 27, blk B, elev 2553 ft, anhydrite 1165 ft, salt 1244 ft, lime 3760 ft, abnd 4004 ft.

WEST TEXAS WILDCAT STARTS

Martin County—Amon G. Carter et al's Claer 1, 1380 ft out sec lab 22, leag 263, Kent CSL, lcn 5500-ft test.

Midland County—J. Y. Francis et al's J. O. Nobles 1, c ne se T&P 29, blk 40, T-1-S, lcn.

Pecos County—Magnolia's Alan Robertson 1, c nw sw T. & St. L. Ry. 16, blk 142, Ordovician test, dr 215 ft.

Phillips' Price 1, c se nw T. C. Ry. 11, blk 101, rur 8500-ft test.

Terry County—Dan Auld et al's Fee 1, c sw ne D&SE Ry. 91, blk 4-X, lcn, 7000-ft test.

Winkler County—Amon G. Carter-Pure's Walton 2-C, c sw ne PSL 1, blk B-3, Keystone structure, lcn 10,000-ft test.

North Texas

Baylor County Wildcat Testing in Canyon

Baylor County wildcat testing oil saturation in Canyon series. Deepened Young County discovery tests water in Ellenburger, and will plug back for completion in Mississippian. Jack County deep strike resumes flow.

Baylor County: Jordan Petroleum Co.'s Fayette 1, preparing to acidize Palo Pinto saturation 3017-23 ft, with 4½-in on top this Canyon section.

Archer County: Cooper et al's Knight 1, wildcat between K-M-A and Hull-Silk fields that showed for oil producer in Strawn series, changing to rotary at 4520 ft to deepen to Ellenburger.

Young County: Shell's Bullock 1, recent Mississippian lime discovery that flowed 50 bbls oil hourly natural from saturation, topped 4748 ft, entered Ellenburger 4972 ft and tested dry dolomite to 5001 ft, 4½-in 4741 ft. May plug back for completion without establishing water level in Ellenburger, as this discovery rates among the most important in the district for current year.

Jack County: Taubert-McKee and Sinclair Prairie's Boyd 1, re-worked Ellenburger discovery on Post Oak prospect, resumed its flow, making 51 bbls pipe-line oil via casing 2½ hrs, acidized 1500 gals, perf 6408-18 ft, total depth 6435 ft.

Throckmorton County: Amerada's

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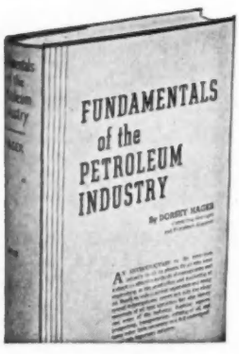

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Williams 1, Wm. Cassell Survey and 2½ miles southwest Spring Creek, abnd 5478 ft in Ellenburger, topped 5135 ft, 281 ft low to its Ordovician failure 10 mi northwest in Baylor County. British-American's McCluskey 1-A, Ordovician project 4 mi northwest Throckmorton, drilling 4800 ft, passed up nominal saturation in Bend, topped 4556 ft.

NORTH TEXAS FIELD COMPLETIONS

Archer County—Wm. Clark et al's Key 1, blk 2, G. P. Meade subdiv, abnd 1501 ft.

Clay County—C. F. Schram et al's Summers 7, blk 2, Wiley Wyatt sur A-431, abnd 1193 ft.

Cooke County—S. H. Fagadau et al's Wiseman 1-B, nec 40-ac lse, O. F. Leverett sur, pump 5 bbls, 739-48 ft, td 753 ft.

Jack County—P. C. Burns et al's Kemp 2, nwc of A. H. Lattimer sur A-363, abnd 3332 ft.

Wichita County: K-M-A Ellenburger—G. E. Kadane-Mul-Berry Oil Co.'s Mangold 1-E, 430 ft from n and 990 ft from e blk 36, P. Castleman sur, flow 1336 bbls ¾-in, acid 3000 gals Ellenburger 4244-4307 ft.

Wichita County: K-M-A—Jack & Henry Grace's Dorris 1, 4500 ft from n and 660 ft from e sec 4 HT&B-J. R. Burris sur A-551, pump 57 bbls oil and 37 bbls water, shot 120 qts Strawn 4105-49 ft and 210 qts 4161-78 ft, td 4178 ft, pb to 4150 ft.

Wichita County—Deep Oil Dev. Co.'s Birk 1-A, M. Powell sur A-565, abnd 1725 ft.

NORTH TEXAS GAS INPUT WELL

Young County—Phillips' Benson-Pan 15-A, TE&L sec 1450, td 965 ft.

NORTH TEXAS WILDCAT COMPLETIONS

Archer County: Failures—Fain-McGaha Oil Corp.'s Turbeville 1, nwc lot 45, Jefferson CSL sur, abnd 1070 ft.

C. T. Robertson Drlg. Co.'s Kelly 1, nwc se BBB&C 11, A-47, abnd 1254 ft.

G. J. Scholl et al's Hyer 1, 851 ft from s and 1368 ft from w 167-ac tr, blks 87 & 89, Jefferson CSL sur, abnd 1152 ft.

Clay County: Failure—Newton Oil Co.'s Krebs 1, se sw ne HT&B 41, A-228, abnd 2297 ft.

Cooke County: Failure—Lou Stogner et al's Berry 1, 1429 ft from westerly sw and 660 ft from se lines SP 22, A-1599, elev 955 ft, Bend 5310 ft, Ellenburger (sidetracked hole) 5932 ft, abnd 6003 ft.

Montague County: Failure—Benson Bros. et al's Riley 1-S, 330 ft from w and 400 ft from s lines C. Ellis sur A-1146, Ranger 845 ft, abnd 1071 ft.

NORTH TEXAS WILDCAT STARTS

Archer County—Guy J. Scholl et al's C. W. Cahoon 1, 1264 ft from s and 1536 ft from e lines John Ruddell sur A-355, lcn.

Clay County—Walter McAbee and Geo. Crockett's Wines 1, 660 ft out sec blk 13, J. J. Hand sur A-175, 2 mi e Joy, lcn Ordovician test.

Morrison and Dawson's Hy Fuhrman 1, 330 ft out nec s 200 of w 320 ac MEP&P 21, A-346, lcn.

Jack County—Shell's Carter 1, 425 ft out nwc TE&L 3311, lcn Ordovician test.

Wichita County—J. W. Baldwin et al's B. L. Robinson 1, 990 ft from w and 1650 ft from s Jas. Walker sur A-328, lcn.

Young County—W. F. Sorrells et al's T. D. Finley 1, 660 ft out swc J. P. Everett sur A-1628, lcn 4350-ft test.

WEST CENTRAL TEXAS FIELD COMPLETIONS

Jones County—Algord Oil Co.'s Badgett 1, sw se ne T&P 5, blk 15, pump 148 bbls, shot 40 qts 1913-34 ft, td 1942 ft, pb to 1937 ft.

Fain-McGaha Oil Corp.'s Dunigan 1-A, sec w 60 of s 100 ac blk 89, DeWitt CSL, flow 940 bbls 1-in, acid 1500 gals 2402-30 ft, td 2434 ft.

Maracaibo Oil Exploration Corp.'s Church 1, sec of e 40 of n 80-ac blk 88, DeWitt CSL, flow 1264 bbls ¾-in, natural, 2299-2315 ft, td 2327 ft.

WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Callahan County: New Pay—Ben Dansby Jr. et al's Ramsey 1, 1400 ft out nec TE&L 2277, in shallow pool and 3 mi ne Putman, elev 1627 ft, top Bend 3216 ft, pump 5 bb's oil and 20 bbls water, acid 2000 gals 3233-77 ft.

Hood County: Failure—Aztec Oil Co.'s Peese 1, 905 ft from nw and 400 ft from ne lines 185.34-ac tr, W. R. Prewitt sur, abnd 2611 ft.

Stephens County: Donnell New Pay—T. P. Coal & Oil Co.-Sinclair Prairie's Donnell 1-A, 3869 ft from nw and 467 ft from sw lines TE&L 1209, elev 1080 ft, Mississippi 4404 ft, pump 78 bbls 40-gr oil and 214 bbls water, Marble Falls, perforations 3928-36 ft, td 4418 ft, pb to 3937 ft.

WEST CENTRAL TEXAS OLD WELL DEEPENED

Taylor County: Wildcat Failure—Tom Medders et al's Moore 1, se sw se T&P 74, blk 19, otd 3148 ft, abnd hfw 3261-65 ft.

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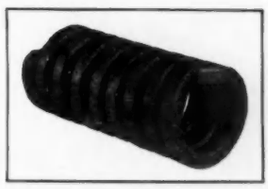

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WEST CENTRAL TEXAS WILDCAT STARTS

Callahan County—A. S. Goodloe et al's Mrs. E. J. Mitchell 1, 660 ft out sec Alfred Clements sur No. 1, 3 mi ne Cottonwood, lcn.

Ungren-Frazier et al's R. McDonald 1, c nw nw BBB&C 100, lcn.

Coleman County—Ungren-Frazier et al's M. W. Witt 1, nw nw sw GH&H 3, blk 2, lcn.

Hood County—Erroll C. Holt et al's J. C. Brock 1, 660 ft out nwc of G. M. G. Grafton sur, Pat No. 1/1720, lcn 5000-ft test.

TEXAS PANHANDLE COMPLETIONS

Gray County—The Texas Co.'s Taylor 7-F, se nw nw H&GN 37 blk B-2, pump 205 bbls, shot 280 qts 2818-70 ft.

Hutchinson County—Dolomite Prod. Co.'s Perkins 7, sec 25, Jas. McDaniel sur, pump 85 bbls, shot 375 qts 2970-3036 ft, td 3060 ft.

Continental's Sanford 5-C, H&TC 79, blk 46, pump 148 bbls, 2726-94 ft.

Texas Co.'s Pond 41, 2115 ft from w and 1130 ft from s TC 1, blk M-21, elev 3046 ft, pump 188 bbls, shot 400 qts 2965-3060 ft.

East Texas

New Hunt County Field Has 5 Operations Active

Hunt County's new Club Lake pool has five active tests, with assurance of early pipe-line outlet. Commercial oil production from sub-Clarksville sand in prospect for Black Oak pool, Wood County. Second failure looms for Concord pool. Navarro County discovery increases oil flow.

Hunt County: Hollandsworth et al's Baker 1, discovery of the Club Lake faulted structure, flowed 266 bbls 39.5-gr oil initial on ¼-in tubing choke, Woodbine perforations 2761-73 ft, and Baker 2, north offset, was due to core for sand late last week, while Baker 3, southwest offset discovery, drilling below surface pipe. Grelling and Hugus have spudded two tests on adjoining Graham-Hart tract. Prince and Gene Germany's Miller 1, two miles northeast, spudded. Gulf Refining Company is awaiting completion additional wells before entering pool with lateral from its nearby trunk line.

Wood County: Sub-Clarksville sand looms as possible oil source in Black Oak pool, recent prolific strike in Paluxy, although no test made. Amerada's Kennemer 2, ¼-mile south of its discovery, logged oil saturation 4079-95 ft in sub-Clarksville, topped 4071 ft, elevation 512 ft, and drilling 4990 ft. Company's Faulk 1, 2000-ft east of producer, passed up oil saturation 4026-34 and 4039-45 ft, elevation 498 ft, and drilling 5490 ft in Georgetown, topped 5065 ft, being 83 ft high. Jerry Hawkins et al's Clark 1, northeast outpost, also credited with logging oil saturation in upper sand, and drilling 5070 ft, elevation 547 ft. Discovery well remains shut in to await fixing of price schedule.

Navarro County: John Hoosier et al's Black 1, Woodbine discovery 2 miles southwest of Bazette, increased oil flow to 15 to 20 bbls daily along with 3,000,000 ft gas daily, Woodbine perforations 3272-79 ft. Additional perforations to be made.

Anderson County: Magnolia's Fitgerald 1, northwest outpost Concord pool, drilling 4850 ft, with base Austin tentatively placed at 4733 ft, being 269 ft low to discovery.

EAST TEXAS FIELD COMPLETIONS

Smith County: Chapel Hill—Sinclair Prairie's Mullican 1, 860 ft from e and 1260 ft from s lines Matthew Arnold sur, flow 347 bbls oil ¼-in, acid 4000 gals Pettit perf 8270-8306 ft, td 8350 ft.

Sinclair Prairie's Olson 1, 687 ft from e and 450 ft from s lines Matthew Arnold sur, elev 501 ft, flow 382 bbls oil ¼-in, acid 4000 gals, Pettit perf 8280-8316 ft, td 8361 ft.

Wood County: Hawkins—E. Keys-B. F. Phillips' Green-Big Sandy School 1, 415 ft w and 2350 ft s of sec J. B. Crain sur, but in J. P. Moseley sur, flow 726 bbls ½-in, Woodbine perf 4745-4912 ft, td 4943 ft.

EAST TEXAS WATER INPUT WELL

Hopkins County: Sulphur Bluff—Shell's Reynolds 2-SW, 467 ft from w lse and 610 ft se No. 6, J. Witmore sur, sand 645-94 ft, td 737 ft, takes 125 bbls sw hr.

EAST TEXAS WILDCAT COMPLETIONS

Hunt County: New Pool—Hollandsworth Drlg. Co. et al's Baker 1, 660 ft out nwc 82.4-ac lse, John Warren sur A-1116, 7 mi se Greenville and Mexia-Talco fault trend, elev 503 ft, Austin chalk 1778-2265 ft, top Woodbine 2758 ft, flow 266 bbls 39.5-gr p 1 oil, tp 100 lbs, cp 75 lbs, natural ¼-in tubing choke, Woodbine perforations 2761-73 ft, td 2778 ft.

Hunt County: Failure—American Liberty Oil Co.'s McNatt 1, 660 ft out sec 358.61-ac lse, Enos Murphy sur, 5 mi w by n Greenville, elev 573 ft, top Woodbine 1995 ft, Georgetown 2717 ft, Paluxy 3325 ft, Massive anhydrite 4220-4340 ft, Travis Peak 4460 ft, Smackover lime 6655 ft, Eagle Mills 6696 ft, abnd in schist 6880-95 ft.

EAST TEXAS WILDCAT STARTS

Bowie County—A. C. McGahey et al's Sims 1, 1940 ft from s and 4900 ft from w lines H. G. Williams sur, lcn.

Cherokee County—Tex Harvey Oil Co.'s L. Priest 1, 660 ft out nec 150-ac lse, Jas. Cooke sur, 4 mi ne Rusk, rur.

Freestone County—C. C. Lanier et al's J. A. Gilliam 1, 830 ft from sw and 660 ft from nw lines 53.9-ac lse, J. McElyea sur, 6 mi s Teague, lcn.

Ohio's Hill 1, 660 ft from nw and 2682 ft from ne lines 220.6-ac lse, Tobias DuBronner sur, 5 mi n Butler, mim for Travis Peak test.

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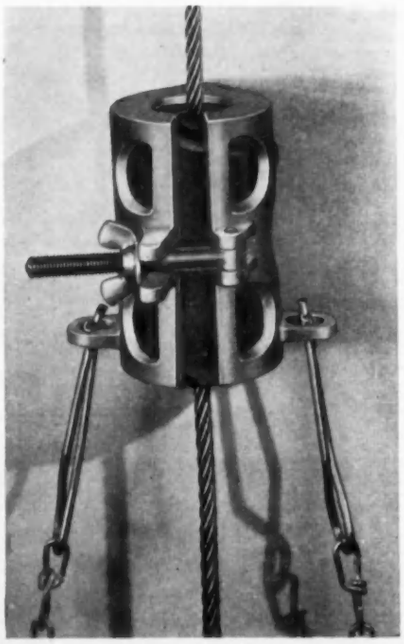
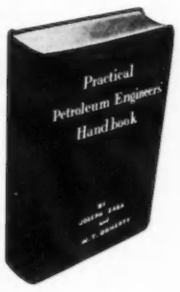


PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

SECOND EDITION
Revised and Enlarged
By JOSEPH ZABA, E.M.M.Sc.
and
W. T. DOHERTY



This book was written by practical oil men. The tables were compiled so that they can be used by anyone to meet practical field situations without further calculations, and will fit 99% of the conditions under which the average operator is working in the field.

The second edition of the PRACTICAL PETROLEUM ENGINEERS' HANDBOOK has been completely revised and enlarged. The many changes which have been made during the past two years in the Standard Specifications of the American Petroleum Institute, particularly in pipe specifications, are incorporated in the new edition. Several tables are rearranged and charts enlarged to facilitate their use. Table of Contents and Index are more complete. Also about 90 pages of new formulae, tables, charts and useful information have been added.

This handbook was compiled and published for the purpose of saving the time of operators, engineers, superintendents, foremen and others.

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Southwest Texas

Wildcats Increased But Field Drilling Off

A material increase in wildcatting in Southwest Texas has brought this type of exploration to near the same level of mid-year 1941. Field work, however, has dropped to less than 50 percent of the level at the same time.

Dewitt County: Tide Water et al's Gips 1, Moore survey, 11 mi sw Yorktown, td 8500 ft, perf 8336-44 ft, dst rec 650 lbs, 60 ft dist, 800 ft dist-cut mud, prep to perf higher. Several sands in Wilcox topped 7000 ft.

Jackson County: Magnolia's Moody 1, N. LaWard deep test, ran electric log 7620 ft, showing sand at 6480-87 ft, a new level for the field.

LaSalle County: Quintana's South Texas 1, nearly 1 mi northwest of Washburn field, was coring 5200 ft below several sands which had shows of oil and gas.

Jackson County: W. S. Boyle et al's Rose & Sample 1, Sutherland sur, 3 mi south of Ganado, flowed 26-gr oil from 4987-95 ft in 20 min drill stem test.

SOUTHWEST TEXAS FIELD COMPLETIONS

Duval County: Agua Preita—Taylor's Parr 1-C, sec 297, abnd 5152 ft.

Jim Hogg County: Colorado—Sun's East 5-B, Las Moretas gr, 136.5 bbls 47.3-gr, 3/16-in, 150 lbs tp, 700 lbs cp, gas/oil ratio 300/1, sand 3008 ft, 5½-in 3009 ft, td 3017 ft.

SOUTHWEST TEXAS WILDCAT COMPLETIONS

Duval County: Failures—Earl Callaway's A. Parr 1, San Andres gr, 8 mi se Benavides, abnd 6526 ft.

Guy I. Warren's Driscoll 4, sec 45, 10 mi w Benavides, abnd 3247 ft.

Starr County: Sun-Kelsey Failure—Sun's F. Montalvo 1-A, sh 9, LaSal Colorado gr, between Sun & Kelsey fields, abnd 7119 ft.

Zapata County: Failure—Bob Barker's A. M. Bruni 1, Blas Uribe gr, abnd 1805 ft.

SOUTHWEST TEXAS WILDCAT STARTS

Duval County—Dan Auld's John Dunn 1, 660 ft s and e lines 1000-ac lse, Diego Hinojosa gr, 5 mi sw Realitos, 5000-ft test.

Jim Hogg County—Sun's East 1-D, 3300 ft s'ly n and w lines 4503-ac lse, Santo Domingo de Arriba gr, 26 mi sw Hebbronville, 6000-ft test.

Sun's Brooks 2, 5940 ft s, 660 ft e lines Dionicio Garza gr, 39 mi n Rio Grande City, 6000-ft test.

Sun's Jones 3, 1980 ft n and w lines 30, 185-ac tr, J. M. Ramirez gr, 39 mi n Rio Grande City, 6600-ft test.

McMullen County—Dan Auld's George 1, 660 ft n and e lines 160-ac lse, sec 64, 12 mi s Tilden, 2200-ft test.

Starr County—Fidelity O&R Co.'s Sugarland 1, 600 ft n, 500 ft e lines 100-ac lse, por 91, 15 mi ne Rio Grande City, 4500-ft test.

Webb County—Mills Bennett's Benavides 4, center blk 2, sec 702, 5 mi nw Bruni, 4000-ft test.

LOWER TEXAS GULF COAST FIELD COMPLETIONS

Calhoun County: Port Lavaca — Sinclair Prairie's Bickford 1, east outpost, Esparza gr, abnd 9251 ft.

Jackson County: Mayo—Crouch et al's P. Glaser 1, Angle sur, 74.49 bbls 31-gr, 7/64-in, 525 lbs tp, 850 lbs cp, gas/oil ratio 300/1, perf 5427-30 ft, td 5600 ft.

Nueces County: Agua Dulce—Mid-Continent's Cage 2, sec 206, 113.34 bbls 38.5-gr, 6/64-in, 1765 lbs tp, 3010 lbs cp, gas/oil ratio 1341/1, perf 6978-88 ft, td 7028 ft.

San Patricio County: Odem—Commercial Prod. Co.'s Lane 1, sec 14, abnd 7205 ft.

LOWER TEXAS GULF COAST WILDCAT COMPLETIONS

Bee County: Failure—Rowe & McBride's White 2, H. H. Williamson sur, 4 mi n Tynan, Vicksburg show 4198-4203 ft, abnd 4741 ft.

Jim Wells County: Quinto Creek, New Sand—Kilgore Developers' (H. R. Smith) Kohler 1, Casa Blanca gr, 3 mi e Orange Grove, abnd March, 1941, reworked, perf 4865-70 ft, 162 bbls 29-gr, 5/32-in, gas/oil ratio 1750/1, 1400 lbs tp, 1875 lbs cp, Frio 4860 ft. This well classified as discovery of pool, but two gas wells in different sand previously drilled; td 5812 ft.

Nueces County: Failures—Gillespie & Sons' J. Bolland 1, blk 8, sec 5, 5 mi se Driscoll, abnd 7510 ft.

Las Tecas Pet. Co.'s Jalufka 2, O. M. Oliver sur, abnd 7482 ft.

LOWER TEXAS GULF COAST WILDCAT STARTS

Jackson County—John B. Coffee's Mauritz 1, 660 ft n and e lines blk 5, J. Heard sur, Ab 28, 5 mi s Ganado, 6500-ft test.

Gulfboard's Burdett 1, 467 ft n and e lines 52.5-ac lse, M. L. York sur, 5 mi se Ganado, 5500-ft test.

SOUTH CENTRAL TEXAS WILDCAT COMPLETIONS

LaSalle County: Failure—Royal O&G Co.'s M. Cartwright 1, lot 12, blk B, sec 761, 10 mi n Ft. Ewell, abnd in Wilcox at 5606 ft.

Lee County: Failure—Holland & Coquat's Richter 1, P. Rucker sur, 20 mi se Tanglewood, Edwards li 6678½ ft, abnd 6787 ft.

WEST CENTRAL TEXAS WILDCAT STARTS

Gonzales County — Continental's Bruns 1 (Unit 1) near s cor 74-ac tr, Wm. Newman sur, 7 mi s Gonzales, 8000-ft test.

Wilson County—Diamond Half's Korzenkwa 1, 660 ft sw & se lines A. Gable sur, 6 mi ne Poth field, 4700-ft Wilcox test.

Texas Gulf Coast

Wildcat Activity Continues Expansion

Wildcatting, which has been increasing in recent weeks in this region, continued to expand. Meanwhile, a new gas field was opened and several important wildcats and outposts were preparing to test shows that had been encountered.

Wildcatting: In addition to several new wildcat tests that definitely got underway (see accompanying field reports), several other interesting tests were due to be started immediately. Included in the latter group were: a wildcat northwest of Clodine, Ft. Bend County, by J. K. Dorrance and Wynne

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Crosby Drlg. Co.; a new location by Continental in the Sheppard Mott area of Matagorda County; two tests by H. C. Cockburn in Ft. Bend County, one located 5 miles west of Rosenberg and the other 8 miles northwest of Rosenberg; an outpost attempt northeast of Citrus Grove gas production in Matagorda County by Pure Oil; a deepening job to the Wilcox in an old Iola area, Grimes County well; George Strake's wildcat 2 miles northeast of Aldine, Harris County; an extension try by Glenn McCarthy at Stowell in Jefferson County; a wildcat by Stanolind in Trinity County; a north outpost at Esperson by General Crude.

In addition, John Mayo will drill near Urbana in San Jacinto County and Amerada will drill a deep wildcat northwest of Freeport in southern Brazoria County before long.

Wharton County: Texas Co.'s Duffy 1, Ogden survey, wildcat southwest of Withers, has been completed as a dry gas producer at 5650-62 ft. No open flow test yet made, but estimated good for 100 million.

Matagorda County: Ohio Oil Co. is still preparing to test its indicated Frio sand discovery in the North Bay City area. McDonald 1, J. Betts survey, had sands at 7865-84 ft, at 8031-81 ft, and at 8345-8410 ft. The lower horizon is due to be tested first, but will require several squeeze jobs to isolate the pay zones. TD is 8688 ft, 5½-in set 8494 ft.

Ohio has made location for a second test, 1320 ft east of potential discovery, but is awaiting tests on McDonald 1.

Trinity County: The Wilcox sand wildcat of Magnolia, Cameron Estate 1, Bond Survey, three miles southeast of Glendale, has set and perforated 5½-in casg. Td is 7266 ft, but first test will be around 5835 ft.

Fort Bend County: Northwest of Rosenberg, Magnolia and Placid Oil Co.'s Huntington 2, Henry Scott survey, perf at 8861-69 ft and flowed 5 bbls salt water hr, 9/64-in choke, with small distillate show. Flow was killed, and retainer run preparatory to squeezing. Td is 8903 ft, 5½-in csg set 8898 ft. A sand showing oil at 8210-18 ft may be tested if new test in lower horizon fails.

Montgomery County: Southeast of the Lake Creek field, in the Deering Creek area, Superior-Atlantic's McMahan 1, swabbed salt water in testing at 11-680-710 ft, and currently is preparing to test sand at 11,525-550 ft.

Jefferson County. Sun's Hamshire et al 1, north outpost in Labelle field area, perforated 20 holes at 6357-63 ft, flowed wash water. 600 lbs tubing pressure and 2200 lbs casing pressure. Squeezed, and well reperforated 6351-57 ft to retest.

TEXAS GULF COAST FIELD COMPLETIONS

Harris County: Goose Creek—T. D. C. Oil Co.'s Chapman 1, 150 ft fr e & 350 ft fr n l of ls, Wm. Scott Upper Lge, pump 75 bbls 28-gr, plus 56% wtr, 4295-4309 ft.

Jefferson County: Lovell Lake—Rowan Drlg's Phillips Boradages Est. 2, 467 ft fr ne and e l of 37-1/7-ac tr, Wm. Carr sur A-102, twin to No. 1, 5½-in 7812 ft, perf 7719-20 ft, 48.12 bbls, ⅛-in, tp 2650 lbs, td 7812 ft.

Orange County: West Port Neches—Texas Co.'s Polk 12-b, 1016-ac tr Jacob Beaumont sur, 466 ft sw of swc Texas Co.'s Orange Nat'l Bk lse, 550 ft e of No. 8-B well, td 5275 ft, 7-in csg 2955 perf 2890-2900 ft swbd oil and water, perf 2890-95 ft swbd oil. Pump test failed, temp. abnd.

Waller County: Katy—Stanolind's Peck 1, 2225 ft fr e, 1240 fr nl H&TC sur 107, 250-ac tr, 7-in csg with screen 7226-7305 ft, 200,000,000 gas open flow, td 7035 ft.

Wharton County: Boling—Danciger's Hawes 2, 430 ft fr se & 550 ft fr ne l of tr, S. G. Austin sur A-2, 7-in 3007 ft, sand 2875 ft, perf, pump 49½ bbls 28.7-gr, td 3007 ft.

TEXAS GULF COAST WILDCAT COMPLETIONS

Harris County: Failure—British American Oil Prod. Co. & Wynne Crosby Drlg. Co.'s Street 1, 2 mi ne Pearland, 330 ft fr ne and nw l of 40-ac unit in n cor of 400-ac tr, D. H. M. Hunter Survey A-76, abnd 6520 ft.

Orange County: Failure—Phillips' Stark 12, w flank test at West Port Neches, 330 ft fr s and w l of 327-ac tr, M. A. E. Hall sur A-403, abnd 7294 ft.

Polk County: Discovery—Jordan Drlg.'s Munson Est. 1, Wilcox discovery at Livingston, 467 ft fr se and 330 ft from ne l 40-ac tr, A. Viesca 7 lge gr A-77, Wilcox 7021 ft, sdy sh gas odor 7022-27, so 7035-47 ft, dst 7036-47 ft, rec 1550 ft oil 35-gr, ¼-in, 14 min, 5½-in csg 7239 ft, perf 7038-52 ft, flow 261 bbls, ¼-in, td 7396 ft.

TEXAS GULF COAST WILDCAT STARTS

Hardin County—Earl C. Hankamer's Hooks 1, se Sour Lake, 389 ft fr e and w lines of 12.82-ac tr and sur, 330 ft fr s and 480 ft fr n l of tr and S. Jackson sur, 4000-ft test.

Harris County—Pure's Siadous 2, Allef area, 524.25 ft fr e and w l of 200-ac tr, and 3151 ft n fr s l and approx 1450 ft fr e and w l of Henry K. Lewis sur, 9000-ft test.

San Jacinto County—Shell's Goldston 1, Mercy area, 660 ft fr ne & se l of 418-ac tr, K. Holiday sur A-157, 9000-ft test.

Louisiana Gulf Coast

West Port Allen and Lake Chicot Extended

Short extensions for the West Port Allen and Lake Chicot fields topped development results, as outcome of tests to be made on prospective producing sands in wildcats of St. Martin, Evangeline and Terrebonne parishes was awaited.

West Baton Rouge Parish: West Port Allen field was extended one location east with completion of Amerada's Southern Land Products Co. 1, 30-7s-

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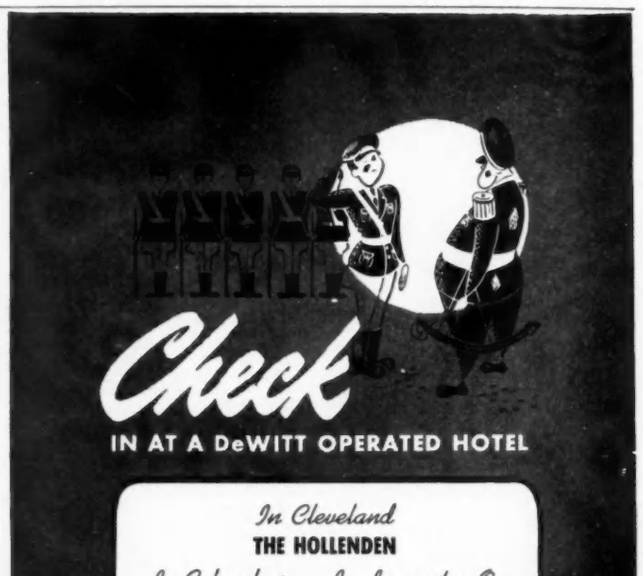

12e. Total depth is 9899 ft. Pipe was perforated 9148-52 ft and the well flowed 204 bbls in 24 hrs through 9/64-in choke. Tubing pressure 1300 lbs, casing sealed. Gravity 34.7.

St. Martin Parish: Amerada-Phillips' Case & Kruzweg 1, Sec. 31-11s-10e, 1-mile east flank outpost at Lake Chicot, flowed 204 bbls in 21 hrs, ⅛-in choke from 63 perf 8156-77 ft. Tubing pressure was 400 lbs. The test was credited with a number of sands between 7700 and td of 9500 ft.

Texas Co.'s State-Lake Fausse Point, Lease 293, which indicates production for the north flank at Fausse Point dome, was deepening after picking up sands showing oil at 8659-8745 ft and 8800-15 ft.

Evangeline Parish: Texas Co. apparently was likely to open Sparta production on the southwest flank of Pine Prairie dome two miles west of Cockfield production on the east flank of the structure. Le Danois Land & Stone Co. B-2 was preparing to test above 9400 ft, td 10,715 ft.

Terrebonne Parish: Humble's Continental Land & Fur Co. 2, 24-18s-12e, wildcat in the West Castell area, set 9⅝-in 9739 ft, td 11,087 ft, and was waiting on cement and making some rig changes. It is expected to test a reported showing at 9665-87 ft.

SOUTH LOUISIANA FIELD COMPLETIONS

Calcasieu Parish: Edgerly Dome—Gulf's Hunter 1, 560 ft n, 760 e swc 22-9s-11w, ne flank test, abnd 5308 ft.

Evangeline Parish: Pine Prairie—Pan American's Mansaur 2, 330 ft n & e sw 37-3s-1w, sand 7945 ft, 7-in 8031 ft, perf 7946-96 ft, 207 bbls 41.2-gr, L/8-in, td 8031 ft.

Jefferson Parish: Bayou de Chene—Texas Co.'s Lafourche Basin Levee 2-A, 3418 ft n, 5769 e nwc 31-19s-24e, perf 2520-25 ft, perf 2460-80 ft, abnd 11,346 ft.

Lafourche Parish: Delta Farms—California Co.'s Delta Farms 5, begin nw cor Sec 6 go s 1 deg 00 min e 2775 ft then e 793 ft in 6-17s-23e, 7-in 9060 ft, perf 9023-56 ft, 327 bbls day 5/32-in.

Lafourche Parish: Golden Meadow—Texas Co.'s LaTerre Land 17, 1992 ft s, 707 w nec 1-20s-21e, abnd 10,531 ft.

St. Charles Parish: Bayou des Allemands—Amerada-Stanolind's State-Bayou des Allemands 6, 1000 ft n, 375 e Seller 1, 13-15s-20e, 1506 ft s, 5286 e nwc 14 in 13-15s-20e, perf 9950-80 ft, 204 bbls, ¼-in ch, 39.8-gr, ¼-in, td 10,460 ft.

SOUTH LOUISIANA WILDCAT COMPLETION

Orleans Parish: Failure—W. T. Burton L&N RR 1-A, s 59 deg 05 min e 18,660 ft fr USBM at s cor of old Ft. McComb, 1-12s-14e, ran log, no shows, abnd 9870 ft.

North Louisiana

Two Concordia Wilcox Wells Flowing 100 Barrels

California Co. has two wells in Concordia Parish flowing from the Wilcox between 4500 and 4600 ft. They are the Pan-American 1, 16-9n-10e, and Pan-American 2, in 2-9n-10e, 1000 ft east of No. 1. While these two wells are flowing 100 bbls daily each or better of 40-gravity oil, the No. 1 found deep gas-distillate production, probably in the Paluxy below the Wilcox and much interest attaches to it from that standpoint. This well may mark the southernmost point of known Comanchean-age production.

No. 1 was drilled to 9997 ft. Salt water and slight gas shows were tested from 9815-34 and 9790-9800 ft. From 8935 to 8946 it flowed 2,660,000 gas with 175 bbls of 59.5-gravity distillate through 3/16-in tubing choke in 24 hrs. Tubing pressure stood at 3150 pounds with gas/oil ratio 15,300 to 1. Due to federal gas well spacing rule or some other reason the well was killed and 7-inch casing pulled. A section from 4565-75 was then perforated and squeezed three times, and the well was finally completed through perf 4567-71 ft and is flowing 120 bbls daily.

No. 2 was drilled to 5201 ft, set 7-inch at 4764, tested salt water from 4660-71, squeezed and perforated again from 4554-75 ft and flowed 110 bbls daily, 20 percent salt water, and preparations were made to squeeze and re-perforate.

NORTH LOUISIANA FIELD COMPLETIONS

Claiborne Parish: Haynesville — Midstates Oil Corp.'s Watters Seegars Unit 1, sw ne 11-23n-8w, perf Pettit lime 5283 to 5303 ft with 240 shots, acidized 5000 gals, flow 480 bbls ¼-in, tp 250, cp 500, td 5320 ft.

Ohio's C. Beene Acct. 2 P-1, 22-23n-8w, perf Pettit lime 5246-61 with 90 shots, 5267-73 with 36 shots, 5292 to 5307 with 60 shots, 5316-26 with 60 shots, acidized 6000 gals, flow 277 bbls 8 hrs, ⅛-in, td 5380 ft.

Ohio's Sherman Acct. 5 P-2, ne nw 15-23n-8w, perf Pettit lime 5255-72 with 100 shots, 5294 to 5306 with 48 shots, 5316-23 with 42 shots, acidized 5000 gals, flow 200 bbls 6 hrs, ¼-in, cp 750, tp 600, td 5376 ft.

Ohio's J. A. Seegars Acct. 3 P-1, c sw se 9-23n-8w, perf 5330-48 with 90 shots, 5389-94 with 20 shots, acidized 3000 gals, flow 960 bbls, ¼-in, cp 600, tp 400, td 5450 ft.

Ohio's Anna Taylor Acct. 7 P-1, c ne nw 14-23n-8w, perf Pettit lime, 5246-72 with 156 shots, 5296-5300 with 12 shots, acidized 5000 gals, flow 720 bbls, ¼-in, cp 650, tp 450, td 5380 ft.

Ohio's Unit 1, S. C. Waller-F. M. Taylor, sw c 13-23n-8w, perf Pettit lime, 5236-60 with 100 shots, 5285-5292 with 15 shots, acidized 5000 gals, flow 79 bbls in 2 hrs, ¼-in, cp 675, tp 500, td 5370 ft.

Blackwell O&G Co.'s Taylor Unit 1, c sw ne 10-23n-8w, flow 50 bbls hr, ¼-in, cp 600, tp 550, 5000 gals acid, perf Pettit lime 5325-30, 20 shots; 5345-50, 20 shots; 5370-75, 20 shots, td 5455 ft.

Ohio's J. L. Garrett Acct. 3 P-1, c sw nw

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24-23n-8w, flow 201 bbls 5 hrs, ¼-in, cp 700, tp 550, 5000 gals acid, perf 5270-96, 156 shots; 5339-44, 20 shots; 5357-72 with 20 shots, td 5400 ft.

Ohio's Haynesville Mercantile Co. Unit P-1, c sw se 13-23n-8w, would not flow, swabbed three days, erecting pump, td 5380 ft.

Ohio's S. T. Hunt Acct. 3 P-2, c sw ne 16-23n-8w, flow 383 bbls 7½ hrs, ¼-in, cp 800, tp 775, 4000 gals acid, perf 5284-5302 with 108 shots; 5331-34 with 12 shots; 5346-52 with 30 shots; td 5400 ft.

Ohio's L. L. Sherman Acct. 2 P-1, 742 ft e and 603 ft n sw cor 23-23n-8w, flow 198 bbls 4 hrs, ¼-in, cp 775, tp 600, 5000 gals acid, perf 5333-50 with 102 shots, 5354-62 with 48 shots, 5382-87 with 15 shots, td 5463 ft.

White & Hinton's R. P. Bond A-1, 1874 ft w and 766 ft n of se cor 21-23-8, flow 250 bbls 8 hrs, ¼-in, cp 710, tp 300, 3000 gals acid, perf Pettit lime 5400-18 with 90 shots, 5464-74 with 50 shots, td 5323 ft.

Sabine Parish: Converse—Whitehurst Drilling Co.'s Paul Estate 1, c ne nw 28-9n-13w, abnd 3252 ft.

Clairborne Parish: Sugar Creek—Carter's Dobbins 2, 12-19n-6w, flow 94 bbls 35.4-gr in 3 hrs, ¼-in, tp 675, cp 725, perf 5828-35 40 shots, td 5951 ft.

LaSalle Parish: Little Creek—W. H. Hunt's McCartney Estate 1, c ne nw 26-9n-2e, perf Wilcox 2638-41 with 24 shots, flow 84 bbls, 40% bs&w, 13/64-in, tp 100, cp 360, gor 1155/1, td 2940 ft.

NORTH LOUISIANA WILDCAT START

Tensas Parish—Carter's Jacoby 1, c se se 34-14n-11e, lcn.

ARKANSAS FIELD COMPLETION

Columbia County: Village—E. G. Bradham's Tissue 1, 14-17-19, flow 526 bbls, 10/64-in, tp 1300.

Lafayette County: McKamie — Carter's Hanes 3, c ne 36-17s-24w, flow, no gauge, perf 9240-70 ft, 152 shots, top first porosity 9152 ft, base 9161 ft, top main porosity 9180 ft, base 9304, td 9330 ft.

Midway-Barnsdall's Powell 2, 10-15s-24w, flow to pits, top porosity 6405, td 6475 ft, gauge delayed pending tankage.

ARKANSAS WILDCAT START

Miller County—Carter's Orr 1, c se sw 3-16s-28w, dr 790 ft.

Miller County: Sylvestre—Wadley et al's Mann 1, c se ne 4-15-28, lcn.

Columbia County—M. S. Lake's Young 1, c ne se 21-15-21, lcn.

Sinclair Prairie's F. W. Souter 1, c ne sw 15-17-22, lcn.

Little River County—W. S. King's Tootle 1, ne c se ne 8-13-31, lcn.

MISSISSIPPI COMPLETIONS

Madison County: Sharpsburg - Pickens — Phillips' Whitworth 2, c nw se 4-11n-3e, flow 211 bbls, ⅛-in, cp 200, tp 140, perf 4835-40 ft, td 4910 ft, Wilcox 1260 ft, Midway 3100 ft, Selma 3894 ft, Eutaw 4796 ft, porosity 4834 ft.

Lamar County—W. S. F. Tatum's No. 2, nw se 13-2n-16w, abnd 7700 ft.

MISSISSIPPI WILDCAT STARTS

Clark County—C. L. Higgason et al Long-Bell 1, sw cor 10-3n-16e, rig.

Issaquena County—Pres Cochranes' Anderson-Tulley 1, nw sw 17-17n-3e, lcn.

Jones County—Sinclair-Wyoming's Wausau Southern 1, c nw sw 25-8n-10w, lcn.

Scott County—Carter Oil Co. et al's Newell Mineral Lease 1, c n½ nw sw 32-5n-7e, lcn.

R. N. Turnbows' Coward 1, c sw ne 29-8n-6e, lcn.

Warren County—Roy Lee, trustees' Anderson-Tulley 1, c nw ne 36-18n-4e, building road.

Wilkinson County—Bering Oil Co.'s Crosby 1, c sw sw 10-3n-1e, spudded, sd.

Rocky Mountain Area

Second Sherrard Dome Test Dry in Dakota

Second test on Sherrard Dome, Wyoming, dry in Dakota. Starting another test Reagan structure gas discovery, Montana. Morrison test on North Baxter Basin, Wyoming.

Sherrard Dome: Sinclair - Wyoming Oil Co.'s Anderson 1, SE SE SE 14-25n-89w, second test Sherrard Dome, found Dakota sand, 2835 ft, dry, Lakota topped 2950 ft, yielded 2115 ft of sulphur water in 30 min, set 9⅝-in 3072 ft, drilling ahead for Tensleep deep objective. Test 3½ miles northwest company's gas discovery in Dakota series after plugging back to 4433 ft from 5185 ft where had water in Tensleep.

Reagan Nose: Ed Reagan moving in slim-hole rotary for a second test on Reagan Nose structure, Glacier County, Montana. Location in C NW NE 27-37n-7w, ¾ mile south of his discovery of past fall which made 6.0 gas with spray of oil from Madison lime at 3869 ft.

Midway Area: R. C. Tarrant's Wood 1, C NE NW 32-28n-1w, Midway area, Pondera County, Montana, wildcat, bailed 1½ bbls 43 gravity oil per hour 1690-1700 ft in Sunburst sand, deeper drilling developed water 1710-1720 ft. Test, located on 16,000-acre block, drilling ahead for Devonian expected at 2750 ft. Madison expected 1925 ft.

North Baxter: North Baxter Basin gas field, Sweetwater County, Wyoming, Mountain Fuel Supply Co.'s Union Pacific 3, C N L NW NE 11-19n-104w, spudding, located upthrow side of major fault north end of structure. Mile to south and west Mountain Fuel's Lee 1, which completed in 1938 in Sundance for 6.0 gas, reported, but unconfirmed, had nearly hole full of oil from the Dakota.

MONTANA COMPLETIONS

Glacier County: Cut Bank—Glacier Production's Van Ormer 9, ne ne sw 17-33n-5w, swab 96 bbls, Lower Cut Bank 2959-65, td 2969 ft, pb 2966 ft, elev 3858 ft.

Phillips County: Bowdoin—Montana Dakota Utilities' 679, nw se sw 30-32n-33e, .481 gas, 235 lbs shut-in pressure, Bowdoin sand 705-765, Phillips sand 940-980 ft, td 1030 ft.

Montana Dakota's 680, sw ne sw 29-32n-33e, .606 gas, 225 lbs shut-in pressure, Bowdoin 705-745, Phillips 975-1000, td 1020 ft.

Montana Dakota's 681, sw ne sw 31-32n-33e, .560 gas, 250 lbs shut-in pressure, Bowdoin 715-775 ft, Phillips 950-990 ft, td 1015 ft.

WYOMING COMPLETIONS

Carbon County: Rock River—Ohio's State 14, nw ne sw 34-20n-78w, pump 190 bbls, 3726 ft.

Niobrara County: Lance Creek—Continental's 5, Rodeo-3, sw sw se 26-36n-65w, pump 207 bbls, 4135 ft.

Park County: Oregon Basin—Kirk Oil Co.'s Connaghan 1, nw sw se 29-51n-100w, flow 400 bbls, 40/64-in, 700 lbs back pressure on csg, Embar lime 3344-73 ft, td 1000 gals acid.

Yale Oil Corp.'s Govt 1, nw se nw 29-51n-100w, 480 bbls, 40/64-in, 270 lbs back pressure on csg, 1000 gals acid, Embar 3321-58, td 3360 ft.

Weston County: Dewey Dome—W. H. Connor's State 3, c n l ne sw 36-42n-61w, abnd 1656 ft.

California

Six Operators Plan Fresno County Wldcat

Contra Costa County dry gas test abandoned. Six operators plan wildcat in Fresno County. Los Angeles County deep test suspended.

Contra Costa County: Tide Water has abandoned Bethel Comm. 1 dry gas test in 9-2-3, Rio Vista area, after failing to pick up showings of importance in drilling to 4975 ft.

Fresno County: A group of six operators, Pure, Barnsdall, Seaboard, Signal, Getty, and Jergins, are completing arrangements for a test in the Mendota-Penoche Creek area on a contribution basis. Location is scheduled for Section 22-15-13.

Los Angeles County: Standard's deep test, Murphy-Coyote 129, 18-3-10, in the West Coyote field, bottomed at 9295 ft has apparently failed to get any showings of importance in the lower portion of the hole and has been temporarily suspended after drilling to 5954 ft.

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CALIFORNIA FIELD COMPLETIONS

Fresno County: Helm—Amerada's Weyant 37-27, 990 ft n, 990 w s¼ cor 27-16-27, flow 219 bbls 33.2-gr, 12/64-in, 700/0 lbs, perf 8070-8080 ft, td 8160, pd 8116 ft.

Fresno County: Riverdale—Amerada's Clemente 74-22, 2310 ft s, 990 w ne cor 22-17-29, flow 200 bbls 36.7-gr, 9/64-in, 1380/0 lbs, 67 ft perf 6840 ft, td 6840 ft.

Amerada's Zanolini 38-23, 330 ft n, 990 w s¼ cor 23-17-19, flow 195 bbls 36.8-gr, 16/64-in, 350/0 lbs, 36 ft perf 6840 ft, td 6840 ft; top oil sand 6810 ft.

Kern County: Buena Vista—Standard's No. 11-35, 2110 ft s, 1640 w ne cor 35-31-23, pump 21 bbls, 258 ft perf 3140 ft, td 3145 ft.

Kern County: Greeley—Standard's KCL 11-33, 1655 ft s, 990 e nw cor 18-29-26, flow 1890 bbls 34.4-gr, 40/64-in, 1040/1225 lbs, 159 ft perf 11,509 ft, td 11,510 ft.

Kern County: Midway-Sunset—Texas Co.'s Fee 105, 176 ft s, 1591 e w¼ cor 36-31-22, pump 12 bbls 15.9-gr, 72 ft perf 1190 ft, td 1239 ft.

Los Angeles County: Aliso Canyon—Tide Water's Sesnon 1, 334 ft n, 5487 w sta 84, LA city boundary, flow 3100 gas, 16/64-in, 1600/1650 lbs, 249 perf 8907 ft, td 8912 ft.

Orange County: Huntington Beach—J. H. Marion's Fee 1, 135 ft s, 260 w ne cor s½ sw nw sw 36-5-11, pump 68 bbls 16.5-gr, 45 ft perf 4156 ft, td 4231 ft.

Santa Barbara County: Santa Maria Valley—Signal's Yelkin 8, 330 ft n, 330 w c sw 26-10-34, pumped 450 bbls, 480 ft perf 5003 ft, td 5012 ft.

CALIFORNIA WILDCAT COMPLETIONS

Contra Costa County: Bethel Island Area Failure—Tide Water's Bethel Island Comm. 1, 881 ft s, 70 e c 9-2-3, Tod Green sand 4815 ft, Ione 4938 ft, abnd 4975 ft.

Fresno County: Mendota Area Failure—Jergins Oil Co.'s Cheney Ranch 3, 990 ft s, 990 e nw cor 30-14-13, sand showing few amber cuts cored 6899 ft, abnd 7703 ft.

Kern County: Mount Poso Area Failure—D. G. Vedder's Glide 29-2, 660 ft n, 660 w se cor ne sw 29-27-28, top barren Vedder 2341 ft, abnd 2361 ft.

Ventura County: Sespe Area Failure—Alford Drilling & Exploration Co.'s Goodenough 1, 205 ft n, 810 e sw cor 18-4-19, fractured sandy brown shale showing tar 1625-1675 ft, abnd 2581 ft.

CALIFORNIA WILDCAT STARTS

Orange County: Kraemer Area—Hamilton & Sherman's Kraemer 3-2, 31-3-9, lcn.

Santa Barbara County: Cat Canyon Area—Standard's Los Flores 5, 33-9-33, lcn.

Michigan

Big Producer Revises Adams North Side Prospects

Big Dundee producer may open previously discounted area for drilling on north side of Adams field.

Adams: C. W. Teater's Collins 2, SE SE SE 15-19n-3e, on north side of Adams field, Arenac County, flowed 264 bbls first hr for estimated 5000-bbls potential from Dundee at 2864 ft. It is 660 ft west of Dundee dry hole, same distance east of small pumper and 660 ft north of a fair producer. Collins lease previously believed on north edge of pool but new development almost certain to spur drilling still farther north.

Evart: Acidized with 2000 gal Sun's Wirth A1, N½ SE SE 22-18n-8w, Osceola County. 1320 west of the field discovery and first completion to follow, flowed 180, 70 and 70 bbls hr respectively after treatment from Dundee lime. It produced 190 bbls day natural. Sun, controlling entire area, announced five new starts.

Land Sale: The lands division of the State Conservation Department announced that the June 24-25 auction pushed its leased acreage to a new record high of 420,000 acres. A total of 39,115 acres were leased at the sale for a bonus of $8803 to average 22½ cents per acre. This average, state officials said, compared to 65 cents an acre at the May auction and an all year average of 44½ cents in 1941. All of the land leased was listed as wildcat carrying a straight eighth royalty.

Pipe Line: Aurora Gasoline Company has received WPB approval and awarded contract for construction to Gentry Engineering Company for 18 miles of 6- and 4-inch coupled line to link the company's 3500 bbl refinery at Elise with Sohio Pipe Line Co.'s main crude oil carrying system. Plant has been dependent on rail and truck.

MICHIGAN FIELD COMPLETIONS

Allegan County: Hopkins—Devonian Testing Co.'s Clawson 1, ne nw se 30-3n-12w, abnd 1555 ft.

Arenac County: Adams—C. W. Teater's Collins 2, se se se 15-19n-3e, Dundee lime, flow 264 bbls 1st hr, 2864 ft.

Clare County: Winterfield—Taggart Bros. Co.'s Sischa 111, c se 17-20n-6w, Stray sand, abnd 1360 ft.

Osceola County: Reed City—Taggart Bros. Co.'s Duddles 36, c nw 16-18n-10w, Stray sand, 4,510,000 gas, 1200 ft.

Taggart Bros. Co.'s Cook 37, c sw 9-18n-10w, Stray sand, 388,000 gas, 1223 ft.

Ohio's Patterson 1, n½ nw se 5-17n-10w, Monroe lime, 167 bbls hr, 3579 ft.

Tuscola County: Wisner—C. W. Teater's Cosens 1, ne se se 26-14n-7e, Berea sand, abnd 1606 ft.

Van Buren County: Bloomingdale—Lester Harris' Munn 1, c sw nw 10-1s-14w, Traverse lime, abnd 1297 ft.

MICHIGAN WILDCAT COMPLETION

Allegan County: Failure—McGerry & Voorhees' Haywood 1, se nw sw 5-3n-11w, Traverse, abnd 1700 ft.

MICHIGAN WILDCAT STARTS

Gratiot County—C. W. Teater's Davis 1, e½ ne ne 34-11n-1w, dr.

Jackson County—Fisher-McCall's Clarke 1, ne se 1-2s-1w, rig.

Montcalm County—Belvidere Oil Co.'s Chipman 1, ne nw se 17-12n-7w, lcn.

The OIL WEEKLY'S TRADING POST

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■ Two 18" Lucey Steam Pumps and one 20" Gardner-Denver Steam Pump. $600.00 each. Melton Machinery & Supply Co. Seminole, Oklahoma.

■ Two 12" x 12" twin cylinder Gumbo Buster Steam Engines. $500.00 each. Melton Machinery & Supply Co. Seminole, Oklahoma.

■ 6" Ideal Jack Shaft Draw Works with Foster Automatic Cat Head. $1,000.00. Also 6" Gumbo Buster Draw Works $600.00. Melton Machinery & Supply Co. Seminole, Oklahoma.

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■ FOR SALE: Rebuilt, guaranteed pumping equipment including two Byron Jackson 2½" 4-stage Multiplex line pumps with motors and control. Various sizes centrifugals. Deep water well pumps. Viking and Worthington 4-inch rotaries. One engine starting compressor. CORKEN PUMP & MACHINERY COMPANY, 206 E. Grand Ave., Oklahoma City, Oklahoma.

■ EMCO-McGAUGHY Integrator for Foxboro and Emco Recording Orifice Meter Charts, good condition. Utility & Industrial Supply Company, Jackson, Michigan.

■ FOR SALE one Lufkin Pumping unit. One Emsco all steel rig front. One No. 12 Marion Pumping unit. Earl Leech, Rockdale, Texas.

Used Casing for Sale

5,000' 2"	4½ Lb. Tubing & Rods
2,400' 5-3/16"	17 Lb. Casing
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Did you know that more men in the drilling-producing business subscribe to **The Oil Weekly** than to any other paper? If you want to buy, sell or exchange good used equipment, a low-cost advertisement in this column will get action for you in a hurry.

HELP WANTED

■ FLEET SUPERINTENDENT WANTED: Major oil producing company has an opening for an automotive superintendent. Applicant should be capable of supervising operations and maintenance of oil field automotive equipment, including diesel engines. In replying state age, experience in detail and status regarding military service to Box 74, c/o Oil Weekly, Houston, Texas.

SITUATIONS WANTED

■ Drilling and production superintendent desires position with reliable oil company in supervisory capacity. Conservative and dependable. More than 30 years practical experience. Good references. Box 50, Oil Weekly, Houston.

ATTORNEY desires connection. Experience in active and responsible practice pertaining to all phases of oil and gas matters, including the examination of titles, corporation work and other important duties. Would consider any position. Hard worker, highest credentials. Age 44. Immediate interview. Address Box 74, c/o The Oil Weekly, Houston, Texas.

LEASES AND DRILLING ACREAGE

■ FOR SALE: Oil and gas leases, drilling propositions, production on large acreage with many proven locations to drill, nonproducing royalties, all in shallow territory; also tracts of proven fluorspar deposits. W. P. Harley, Bowling Green, Kentucky.

■ FOR SALE OR DEVELOPMENT: 4 producing Bartlesville sand 160 acre oil leases. All connected to pipe line. Attractive for flooding. Oil 33 to 37 Gravity. Will sell reasonable for part cash, balance in oil, or join with responsible parties in flooding. VEEDER SUPPLY & DEVELOPMENT CO., Cherryvale, Kansas.

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NEW YORK COMPLETIONS

Allegany County — Bradley Prod. Corp., Nobles farm, Alma, 5 bbls, Richburg, 1333 ft.
New York Oil Co., Gadsby farm, Bolivar, 6 bbls, Waugh-Porter, 1424 ft.
N. V. V. Franchot, Murphy farm, Bolivar, 9 bbls, Richburg, 1388 ft.
South Bolivar Oil Co., McKelvey farm, Bolivar, 5 bbls, Richburg, 1378 ft.
Friendship Oil Co., Ingalls farm, Bolivar, 8 bbls Richburg, 1311 ft.
John Fay, Furnald farm, Wirt, 7 bbls, Richburg, 1429 ft.
Harris & Buehring, Allen farm, Scio, 9 bbls, Richburg, 1280 ft.
Albert Oil Co., Vance farm, Alma, 9 bbls, Richburg, 1349 ft.
Prattsburg Oil Co., Comfort farm, Scio, 8 bbls, Richburg, 1268 ft.
Bradley Prod. Corp., Beers farm, Bolivar, 8 bbls, Richburg 1431 ft.
L. H. Thornton et al, Fassett farm, Willing, 6 bbls, Fords Brook, 1259 ft.
Max Andrews, Burdick farm, Wirt, 5 bbls, Richburg 1345 ft.
Gray Oil Co., Smith farm, Genesee, 7 bbls, Richburg, 1366 ft.
A. C. Shaner Oil Co., Congdon farm, Clarksville, 7 bbls, Richburg, 1284 ft.

NEW YORK INTAKE WELLS

Allegany County—Ebenezer Oil Co., Jerrick farm, Alma, Richburg, 1329 ft.
South Bolivar Oil Co., McKelvey farm, Bolivar, Richburg, 1287 ft.
Producers Oil Corp., "A," Keller-Scott farm, Wirt, Richburg, 1060 ft.
Ebenezer Oil Co., Mecklin farm, Scio, Richburg, 1138 ft.
Hog Brook Oil Co., Pike farm, Alma, Richburg, 1384 ft.
J. F. McBride, Duke farm, Alma, Richburg, 1279 ft.
J. P. Herrick, Howe farm, Bolivar, Richburg, 1416 ft.
L. H. Thornton et al, Fassett farm, Willing, Fords Brook, 1231 ft.
Nova Oil Co., Brown farm, Alma, Fords Brook, 1329 ft.
Deer Creek Oil Co., Hall farm, Genesee, Richburg, 1326 ft.
New York Oil Co., Brown farm, Bolivar, Waugh-Porter, 1376 ft.
Scott & Sackinger, Scott farm, Bolivar, Waugh-Porter, 1379 ft.

OHIO COMPLETIONS

Ashland County—Gibson et al's Copeland 3, 0.18 gas, 816 ft.
Ross, Weimer & Ross' Sapp 2, 4 bbls, 380 ft.
Athens County—Ohio Fuel's Shea 1, abnd 1706 ft.
Coshocton County—Mauller & Patten's Ryan 2, abnd 3210 ft.
Licking County—National Drlg. Co.'s Nethers 1, 0.14 gas, 2700 ft.
Loraine County—Ringler Co.'s Scott 1, abnd 2438 ft.
Medina County—William Dempsey's Chodera 2, 1.75 gas, 3539 ft.
Meigs County—Ohio Fuel's Brown 1, abnd 975 ft.
Ohio Fuel's Gardner 1, abnd 1084 ft.
Morgan County—Swingle et al's Weaver 1, 0.2 gas, 1108 ft.
Muskingum County—Industrial Gas Corp.'s Gander 1, 0.68 gas, 4340 ft.
Ohio Fuel Gas Co.'s Gallery 1, 0.3 gas, 3733 ft.
Noble County—S. E. Ruby et al's Fee, 0.05 gas, 1507 ft.
Perry County—Preston Oil's Wagner 2, 150 bbls, 3365 ft.
Pure's Williams 5, 128 bbls & 0.05 gas, 3255 ft.
Pure's Ford 2, 6.45 gas, 3250 ft.
B. G. Davis et al's S. B. Yost, abnd 2745 ft.
Summit County—William Dempsey's Prusak 1, 1.5 gas, 2928 ft.
Washington County—H. W. Baker's Woodburn 1, 0.45 gas, 1005 ft.
T. B. Russell's Martin 9, 4 bbls, 480 ft.
Ohio Fuel's Bridgewater 1, abnd 1509 ft.

OHIO WELL DEEPENED

Medina County—Preston Oil's Ford 1, 6 bbls, deepened from 3196 to 3230 ft.

PENNSYLVANIA COMPLETIONS

Armstrong County—Apollo Gas Co.'s Schaeffer 1, 0.09 gas, 3303 ft.
Clarion County—Ralph Thompson et al's Guiher 3, abnd 2570 ft.
Owens-Illinois' Hetrick 2, 0.04 gas, 3200 ft.
Fayette County—Brummage & Brummage's Hartley 1, 0.21 gas, 2689 ft.
Greene County—Greensboro Gas Co.'s Hartley 1, 0.04 gas, 2888 ft.
Washington County—Carnegie Natural Gas Co.'s Taylor 5, 100 bbls, 2747 ft.
Foley & Williams' Holbert 1, 0.63 gas, 985 ft.

PENNSYLVANIA WELL DRILLED DEEPER

Armstrong County — Equitable Gas Co.'s Grove 1, abnd 3388 ft.

WEST VIRGINIA COMPLETIONS

Calhoun County—McCall Drlg. Co.'s Wease 1, 2 bbls & 0.21 gas, 1995 ft.
Gilmer County—Pitts. & W. Va. Gas Co.'s Moore 7854, 0.2 gas, 1766 ft.
Jackson County—Columbian Carbon Co.'s Winters 1, abnd 5233 ft.
Columbian's Jackson County Bank 1-B, 7.12 gas, 5412 ft.
Godfrey L. Cabot's Putnam 32, 4.7 gas, 5113 ft.
Kanawha County—Rex O&G Co.'s Haynes 3, abnd 1440 ft.
Marion County—South Penn Nat. Gas Co.'s Erwin 7, 7 bbls, 3200 ft.
Putnam County—Hunters Gas Co.'s Johnson 2, gas, 2274 ft.
Ritchie County—Pine Valley Producing Co. Inc., Strickler & McGennis 1, 1 bbl, 2400 ft.
Tyler County—Am. Oil Dev. Co.'s Pierpoint 1, abnd 1820 ft.
Wayne County—Owens, Libby, Owens, Ferguson 1, 0.08 gas, 3272 ft.
Wood County—Clifton Oil & Gas Co.'s Volcanic Oil & Coal Co. 2, 10 bbls, 1388 ft.

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Men in the Industry's News

W. ARMSTRONG PRICE has been elected president of the newly formed Corpus Christi Geological Society. The organization is the result of an effort to conserve transportation. Its membership is composed largely of members of the South Texas Geological Society, formerly headquartering in San Antonio and Corpus Christi. In the past, alternate meetings were held in each city. Some of the members of the new organization are retaining their membership in the regional body. Other officers include: L. B. Herring, vice president and C. I. Jennings, secretary and treasurer.

C. A. WARNER, director and superintendent of the land department of Houston Oil Company, Houston, was guest speaker at a meeting of the Petroleum Engineering Club of Texas A. & M. College on June 25. His subject was "Acquisition of Oil Lands and Leases."

GENERAL JULIO HORTA BARBOSA, president of the Brazilian National Petroleum Council, is scheduled to visit the United States this month to confer with government officials about petroleum industry allocations.

ARTHUR B. ANDERSON, director of the Minnesota State Petroleum Commission, has been appointed special aide to the chief of OPA fuel rationing division in Washington. He is president of North American Gasoline Tax Conference and will be liaison officer between OPA and state gasoline tax administrators in the Eastern rationing area.

PAUL L. GUARIN, assistant production manager in the Texas Gulf area for Shell Oil Company, Houston, has been commissioned a major in the Army. He spent five years in oil field engineering work in the United States and South America before joining Shell in 1926 as assistant mechanical engineer at Tulsa. Over the next 12 years, Guarin held various supervisory jobs throughout the Mid-Continent and Texas Gulf Areas, and in 1938 was appointed assistant production manager at Houston.

W. A. DRAKE, Humble Oil & Refining Company gas plant superintendent, has been transferred from the Flour Bluff gasoline plant to Lirette as district gas superintendent.

W. A. ALEXANDER, who has been chief exploitation engineer in Shell Oil Company's Texas Gulf Area, has been appointed acting assistant production manager, succeeding Paul L. Guarin, now with the Army. Alexander joined the Shell organization in 1928, and since then has held various engineering and supervisory positions.

MISS HONORIA B. MOOMAW has been appointed acting secretary of the Natural Gas Section of American Gas Association. E. Holley Poe, secretary of the section resigned to become Director of the Natural Gas and Natural Gasoline Division of OPC. Miss Moomaw since 1939 has been secretary to Poe.

D. B. HODGES has been appointed manager of transportation and supplies department, a newly created position in Shell Oil Company. He previously headed supplies and shipping in the transportation and supplies department. Hodges first worked as a clerk in the Ventura, California, oil fields, was later transferred to the Martinez Refinery and then to the manufacturing department at San Francisco. He served as an executive assistant in that department until his transfer to New York in 1940 as manager of supplies and shipping.

FRANK E. OWENS, Humble Oil & Refining Company district petroleum engineer, has been transferred from Luling to Stratton district.

M. E. GRANT has been named head of supplies and shipping in the transportation and supplies department of Shell Oil Company. A lawyer, he spent his first six years with Shell on legal and public relations assignment. In 1936, he transferred to the transportation and supplies department of the St. Louis office as assistant to the traffic manager. Later, he was appointed assistant to the vice president. He moved to New York as head of purchases and development in 1940.

H. L. PUTNAM, assistant division manager in Tulsa for National Supply Company until his recent commissioning as an air corps major, is to be attached to a British air corps training unit at Liberal, Kansas, in the near future.

D. E. MARTIN, counsel for Wilcox Oil & Gas Company, Tulsa, has been named assistant director for Oklahoma on the Interstate Oil Compact Commission. He succeeds W. J. Holloway, resigned.

RICHARD H. WILLS, member of the legal staff of Mid-Continent Petroleum Corporation for 20 years, has been named to succeed the late J. C. Denton as vice president and general counsel for the company.

OLIN CULBERSON, Texas Railroad Commissioner, has been named as the representative of Texas on the National Conference of Regulatory Officials, a group set up by OPC several months ago. Commissioner Sadler served as the Texas member until his induction into the army.

JOE DRANGUET has been elected executive vice president of Lucey Petroleum Company, Dallas, Texas, J. F. Lucey, president, has announced. Dranguet's addition to the managing personnel will complete the general expansion program of the company which has been under way following Capt. Lucey's disposal of his interests in Talco Asphalt & Refining Company. The geologic and land depart-

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ments of Lucey Petroleum Company have been expanded and the company plans renewed activity in Texas and Louisiana.

Dranguet became associated with the oil industry in 1927, with Root Petroleum Company at El Dorado, Arkansas, remaining with that organization until 1937 when he became secretary-treasurer of Talco at the time of its organization.

W. E. BOYD, Humble Oil & Refining Company civil engineer has been transferred from Hawkins to the East Texas division office.

E. A. BACON, crude-oil representative at Tulsa for Shell Oil Company, has been commissioned major in the Army Ordnance Department, stationed in Washington. Bacon, a veteran of the last war, entered the oil business a year after his discharge from the army, joined Shell in 1923 as chief scout at Tulsa, and has been in charge of crude-oil purchases and sales for the Mid-Continent since 1930.

W. B. CASE, assistant manager of crude oil, transportation and supplies department of Shell Oil Company, succeeds E. A. Bacon as crude oil representative at Tulsa. Case joined the organization in 1923 as valuation engineer. In 1929 he was transferred to St. Louis as assistant to the vice president in charge of production, and in 1934 was assigned to New York with duties in the production department.

J. C. POSGATE, Humble Oil & Refining Company district petroleum engineer, has been transferred from Stratton to the Southwest Texas division office.

EDWIN A. BOOTH has been appointed manager of sales for the Tulsa office of Spang Chalfant Inc., effective July 1, succeeding O. A. Bergman, resigned. Booth formerly was with the St. Louis office.

JOHN FITTS, nationally known for his knowledge of fossils in Southern Oklahoma counties, associate member of American Association of Petroleum Geologists, and active in petroleum development in Oklahoma, died June 30 at the age of 62. Fitts field, Pontotoc County, was named for him.

HUGH AIKMAN, secretary and publicity manager of J. H. Williams & Company, died at his Buffalo home on June 20. He had been with the company since 1892, completing 50 years of service last February. In 1900, he was appointed sales manager of the special forging division and in 1918 was promoted to advertising manager. In 1920 he was elected secretary and publicity manager of the company.

An A.A.P.G. Book (1941)

POSSIBLE FUTURE OIL PROVINCES of the UNITED STATES AND CANADA

A symposium conducted by the Research Committee of The American Association of Petroleum Geologists, A. I. Levorsen, chairman. Papers read at the Twenty-sixth Annual Meeting of the Association, at Houston, Texas, April 1, 1941, and reprinted from the Association Bulletin, August, 1941.

•

Edited by A. I. LEVORSEN

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The purpose of this symposium is to get an over-all picture of the undiscovered oil resources of North America, north of the Rio Grande. Ten geological organizations have participated, to the end that this survey has behind it the authority of many geologists representing state and national geological surveys, large and small oil companies, and consulting and independent geologists. A map and a section of geology, stratigraphy, and structure illustrate each province description.

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Squeaks from the Bull Wheel

Enough

A mountaineer saw, for the first time, a bunch of bananas.

"Want to try one, Jeff?"

"No, I reckon not. I've got so many tastes now I kain't satisfy, I ain't aimin' to take on any more."

Too, Too Perfect

A business man was trying out an applicant for a job in the office. He offered to match for the drinks at a soda fountain. The young man said he never gambled. He offered him a cigar, but the applicant didn't smoke. Back at the office the boss dug down into a desk drawer and produced a pint of bourbon.

But the young man said he'd never touched a drop in his life.

"You're the type of young man I've been looking for. I want you to come out to the house and meet my daughter."

"No thanks," said the model youth. "I never bother with women."

Fine Distinctions

"Nora, I understand that you have a model husband."

"Shure, mum, he's the foinest a girl could have. If you could see the way he trites me, mum, ye'd be after saying he were a friend instid of a husband."

Wise Girl

"Would your boy friend object if you went out with other fellows?"

"He wouldn't hear of such a thing."

Just Sarcasm

"Janitor, you could cool our apartment nicely this summer if you would run ice water through the radiators."

"Can't be done, madam."

"What did you have in them last winter?"

Just Applesauce

The speaker was much annoyed by a man in his audience who coughed and sneezed and blew his nose almost constantly. Finally, the speaker could stand it no longer. As politely as he could he suggested to the brother who was having so much discomfort that a visit to the open air might be good for his cold.

"I haven't any cold," came the answer. "I'm just allergic to applesauce."

Notes for the Equipment Buyer and User

Voltage Starters

NELSON ELECTRIC MANUFACTURING COMPANY

Nelson Electric Manufacturing Company, 217 North Detroit, Tulsa, has announced reduced voltage starters to be used with AC squirrel-cage motors to limit the inrush starting current, or to lessen the strain on the driven machinery.

The class 431 motor starter is suitable for applications in oil refineries, gasoline plants, pumping stations, where explosion resisting motor starters are desired. By means of an auto type transformer the starting current demand is reduced, by reducing the voltage across the motor terminal during the accelerating period. Available in sizes from 5 to 500 horsepower in 220, 440 and 2200 volts.

The class 431 oil immersed reduced voltage starter consists of a 5-pole starting contactor, a 3-pole running contactor, a control relay, a timing relay, overload protection and a two winding autotransformer. Enclosure tank is of heavy gauge sheet steel, electrically welded.

All equipment is mounted on a framework as a complete unit, easily removable from the tank. All parts of the unit are immersed under at least 6 inches of oil. An oil-level indicator mounted on the front of enclosure tank, shows oil level at all times. Conduit connections are made through a conduit box mounted on the side of the enclosure tank.

Germicide

BETTIS SALES COMPANY

Bettis Sales Company, Southwestern sales offices in Southern Standard Building, Houston, has announced a new germicidal compound to substitute for chlorine in treatment of bacteria in drinking water and in sewerage systems. The compound contains both mercury and oxide and has been developed especially to provide a bacterial agent that could be easily controlled and safely handled. It is available in liquid form in 5, 10 and 25 gallon quantities.

Hoists

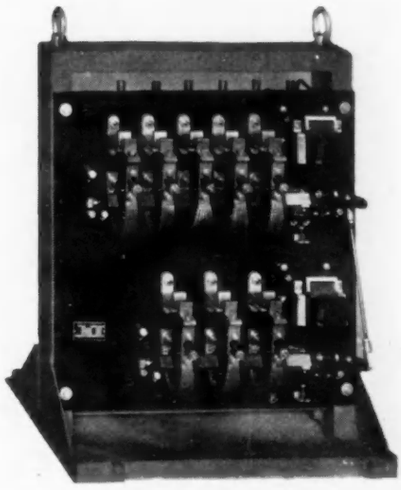
Coffing Hoist Company, Danville, Illinois, has issued catalog G-6, explaining the advanced designed hoists. In condensed form it contains information, specifications and prices on complete line of ratchet lever hoists, electric hoists, spur geared chain hoists, differential chain hoists, I-beam trolleys, load binders and utility maintenance tools.

Density Recorders

The Foxboro Company, Foxboro, Massachusetts, has issued bulletin A-264 describing instruments for the automatic measurement and recording of densities of process liquids.

In place of periodic readings by hydrometer and still samples, the Foxboro density recorder records the continuous direct measurement of the flowing liquid. For processes where automatic control of density is important for operating efficiency, the Foxboro stabilog density controller is supplied.

The instruments have identical measuring systems and both use standard Foxboro charts, which may be read in specific gravity, Baume, Brix or other recognized scales. Charts may be read to small unit values, and the accuracy of the measuring and recording is not affected by turbulence, viscosity or by foam. Installation of either instrument is relatively simple. Auxiliary equipment for the installation is also shown in the bulletin.



Nelson Voltage Starter

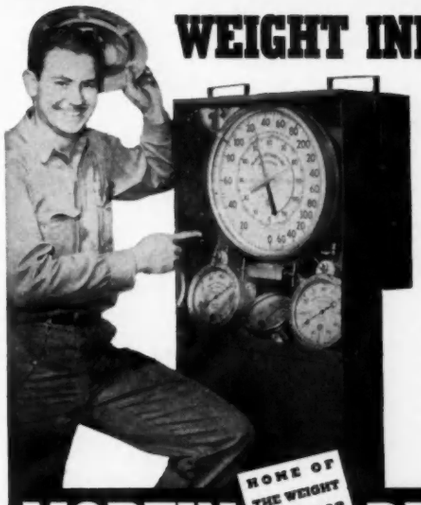
Association Has Rigid Standards For Well-Head Equipment

A long-range move toward a program of standardization of well-head equipment, adoption of nomenclature, certified pressure testing and other recommended practices has been projected by the Association of Well Head Equipment Manufacturers.

This program has resulted in adoption of terms and definitions for equipment, as well as a code of practices on the pressure-testing certification of well-head equipment. The association has officially adopted a monogram and seal both of which have specific purposes. Association standards are intended to govern the manufacture of well-head equipment by providing greater interchangeability, more safety and economy.

By use of the association's standards, which are expected to be universally adopted by the manufacturers and users, economies and simplifications have resulted. Greater flexibility in use of these standards also has helped to effect suitable equipment. The standards were set up by experienced representatives of oil operators and manufacturers after analysis, investigation, and experimentation.

On October 19, 1941, the association adopted terms nad definitions of well-head equipment, which heretofore carried a hodgepodge of nomenclature. They are, in the order of their listing, as follows: casing head, tubing head, casing and tubing suspension, pressure-sealing medium, Christmas tree, and blowout preventers. The casing head and tubing head are comprised essentially of the body, hanger, sealing medium, bonnet, and connecting means,



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the latter of which might be either flanged or threaded connections.

The code of recommended practices of pressure-testing certifiaction, describing the proper use and significance of the monogram and seal, was adopted February 17, 1942.

The monogram and seal on well head equipment, is a guarantee of the manufacturer to the consumer that the material bearing the mark meets association specifications.

Under the code of recommended practices on pressure testing and certification, the scope of the specification covers all materials defined in the terms and definitions of the standardization committee. This specification is designed to cover minimum requirements and materials of equal or superior properties that may be substituted. For the time being, no chemical or physical properties are given, but the suggestion is given that specifications of the American Society for Testing Materials be used tentatively. 1. cast iron to be in accordance with specifications A-126; 2. cast steel to be in accordance with specification A-95; 3. forged steel to be in accordance wtih specification A-105.

The materials covered by the certification are included in four groups, the first being steel castings used for working pressures of 1500 pounds per square inch and over, and forgings used for working pressures 1500 pounds and over. Under group two are included steel castings for working pressures from 500 to 1500 pounds, and forgings used for working pressures from 500 to 1500 pounds.

Under group three, materials include steel castings or forgings used for working pressures from 0 to 500 pounds. Group four includes iron castings for working pressures from 0 to 500 pounds.

Under conditions of testing, the association established minimum requirements, the first of which is that the test rack and testing procedure are to be open to inspection to either the customer or association representative. Records are to be kept of each testing, with competent men to be in charge of testing. Another specification calls for test gauges to be calibrated frequently and record of calibration to be filed.

In testing, the testing pressure in general will equal two times the working pressure. A hydrostatic test with cold water is recommended as a testing fluid.

The assoication has furnished copies of the standards and ideals to all purchasing agents, field superintendents, foreman, drillers and others concerned with the purchasing or specifying of well-head equipment.

The association maintains offices at Houston. Companies authorized to use A.W.H.E.M. symbols so far are Beaumont Iron Works, Beaumont; Brown Oil Tools, Inc., Cameron Iron Works, Inc., Houston; Hinderliter Tool Company, Tulsa; McEvoy Company, and Oil Center Tool Company, Houston; and Rector Well Equipment Company, Fort Worth.

TOM THORLEY and David E. Waters, both of Martin-Decker Corporation, Long Beach, California, have entered active service. Thorley, an engineer, is Lieutenant (J. G.) at the Navy Training School at Notre Dame. Waters is in the Ordnance Department of the Army.

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